

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Laura Davis Examiner #: 7174 Date: 10-29-03
 Art Unit: 1745 Phone Number 30 (415) 749-6296 Serial Number: 09/903,750
 Mail Box and Bldg/Room Location: FE10 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

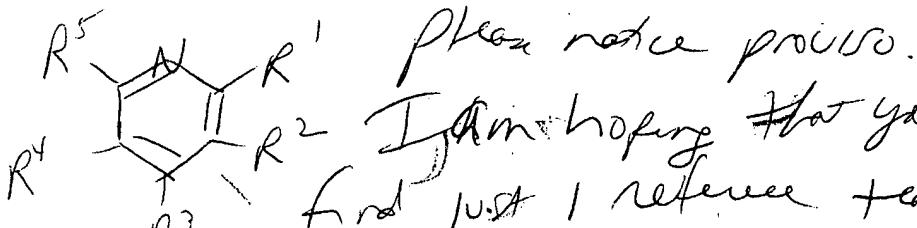
Title of Invention: See front sheet

Inventors (please provide full names): See front sheet

Earliest Priority Filing Date: 10-29-03

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Could you do a General Search + Search
 for an electrolyte solution Comprising an
 organic solvent, a lithium salt & further
 Contains a pyridine compound of formula(I)



I am hoping that you can
 find just 1 reference teaching
 using the compound before 7-13-01
 or even better yet before 7-14-00. Thanks,

Please find back copy of claims xx Laura

STAFF USE ONLY

Searcher: K. Fuller

Searcher Phone #: _____

Searcher Location: _____

Date Searcher Picked Up: _____

Date Completed: 10/30/03

Searcher Prep & Review Time: 20

Clerical Prep Time: _____

Online Time: 9.5

Type of Search

NA Sequence (#) _____

AA Sequence (#) _____

Structure (#) _____

Bibliographic _____

Litigation _____

Fulltext _____

Patent Family _____

Other _____

Vendors and cost where applicable

STN _____

Dialog _____

Questel/Orbit _____

Dr. Link _____

Lexis/Nexis _____

Sequence Systems _____

WWW/Internet _____

Other (specify) _____

WEINER 09/903750 10/30/03 Page 1

=> FILE REG
FILE 'REGISTRY' ENTERED AT 16:38:26 ON 30 OCT 2003
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Property values tagged with IC are from the ZIC/VTNITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES: 29 OCT 2003 HIGHEST RN 610749-29-6
DICTIONARY FILE UPDATES: 29 OCT 2003 HIGHEST RN 610749-29-6

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2003

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP PROPERTIES for more information. See STNote 27, Searching Properties in the CAS Registry File, for complete details:
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

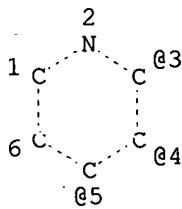
=> FILE HCAPLUS
FILE 'HCAPLUS' ENTERED AT 16:38:31 ON 30 OCT 2003
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FILE COVERS 1907 - 30 Oct 2003 VOL 139 ISS 18
FILE LAST UPDATED: 29 Oct 2003 (20031029/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> D QUE L26
L3 STR



379 *structures*

A @7

VPA 7-3/4/5 U

NODE ATTRIBUTES:

NSPEC IS RC AT 7

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE

L14 36196 SEA FILE=HCAPLUS ABB=ON BATTER?(L) ELECTROLYT?
L15 SEL L14 1- RN : 36335 TERMS
L16 36311 SEA FILE=REGISTRY ABB=ON L15
L18 379 SEA FILE=REGISTRY SUB=L16 SSS FUL L3
L19 79379 SEA FILE=HCAPLUS ABB=ON L18
L21 407 SEA FILE=HCAPLUS ABB=ON L19(L) ELECTROLYT?
L23 131 SEA FILE=HCAPLUS ABB=ON L21 AND (LI OR LITHIUM)
L24 38 SEA FILE=HCAPLUS ABB=ON L23 AND (NON(W)AQUEOUS OR NONAQUEOUS)

L25 9 SEA FILE=HCAPLUS ABB=ON L23 AND ORG?(2A) SOLVENT#
L26 45 SEA FILE=HCAPLUS ABB=ON L24 OR L25

=> D L26 ALL 1-45 HITSTR

45 CA references with utility

L26 ANSWER 1 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 2003:434874 HCAPLUS
DN 138:409145
TI Electrolyte containing basic amine and electrochromic device
IN Ohshima, Shinji; Minami, Masaki; Tanimoto, Junichiro; Kubo, Takaya;
Nishikitani, Yoshinori
PA Nippon Oil Corporation, Japan
SO PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM G02F001-15
ICS H01B001-06; H01M010-40
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
Section cross-reference(s): 72, 74

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---------------|------|----------|-----------------|----------|
| PI | WO 2003046653 | A1 | 20030605 | WO 2002-JP12444 | 20021128 |

W: US

RW: DE, FR, GB

JP 2003161963 A2 20030606

JP 2001-364378 20011129

JP 2003281932 A2 20031003

JP 2002-80693 20020322

PRAI JP 2001-364378 A 20011129
 JP 2002-80693 A 20020322

AB The invention refers to an electrolyte comprising a support electrolyte, an **organic solvent**, and a basic amine, exhibiting high ion conductivity, no liquid leakage, excellent flame resistance, transparency, and

applicable to various uses, for enabling the manufacture of an electrochem. device by a simple method. The electrochromic device comprises an electrolyte layer interposed between two transparent conductive substrates, wherein an electrochromic layer is placed on at least one of the two transparent conductive substrates, and the electrolyte layer contains a basic amine compound in order to improve device performance such as coloring/discoloring response and durability are improved irresp. of the phys. properties of the electrochromic layer.

ST electrolyte electrochromic imaging device

IT Electrochromic imaging devices

(LiF4B; electrolyte with basic amine and electrochromic device)

IT Electrolytes

(electrolyte with basic amine and electrochromic device)

IT 108-32-7, Propylene carbonate 110-86-1, Pyridine, uses 119-65-3, Isoquinoline 553-26-4, 4,4'-Bipyridyl 2440-22-4 9011-17-0, KYNAR 2751 14283-07-9, **Lithium** tetrafluoroborate (LiBF4) 25721-76-0, Polyethylene glycol dimethacrylate 26915-72-0, Methoxy polyethylene glycol monomethacrylate 33454-82-9, **Lithium** trifluoromethane sulfonate 69673-85-4, 1-(4-Isopropylphenyl)-2-hydroxy-2-methylpropan-1-one 155812-81-0, **Lithium** trifluoromethane sulfonamide

RL: DEV (Device component use); USES (Uses)

(electrolyte with basic amine and electrochromic device)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Elna Co Ltd; JP 56-73423 A 1981 HCPLUS
- (2) Sanyo Electric Co Ltd; JP 02-15567 A 1990 HCPLUS
- (3) Sanyo Electric Co Ltd; JP 03-43960 A 1991 HCPLUS

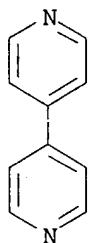
IT 553-26-4, 4,4'-Bipyridyl

RL: DEV (Device component use); USES (Uses)

(electrolyte with basic amine and electrochromic device)

RN 553-26-4 HCPLUS

CN 4,4'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



L26 ANSWER 2 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
 AN 2003:317640 HCPLUS
 DN 138:324047
 TI Liquid-crystalline polysiloxanes and their uses in electrolyte compositions for (photo)electrochemical cells and secondary **nonaqueous** batteries
 IN Yasuda, Takayasu; Wariishi, Koji
 PA Fuji Photo Film Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 33 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01B001-06
 ICS C08G077-48; H01M006-18; H01M010-40; H01M014-00
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38, 75, 76
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------------|------|----------|-----------------|----------|
| PI JP 2003123531 | A2 | 20030425 | JP 2001-322124 | 20011019 |
| PRAI JP 2001-322124 | | 20011019 | | |

AB The electrolyte compns. contain liquid-crystalline polysiloxanes having repeating units $[O(SiR_1R_2O)_nL_1XL_2]$ (R_1, R_2 = alkyl, alkoxy; L_1, L_2 = divalent linking group, single bond; X = mesogen; R_1, R_2, L_1, L_2 , and/or X has ionic substituent; $n \geq 1$) and are used in electrochem. cells, charge-transporting layers in photoelectrochem. cells, and secondary **nonaq.** batteries. Liquid-crystalline polysiloxanes having repeating units $[O(SiR_1R_2O)_nL_1(Q_1YQ_2)n'L_2]$ (R_1, R_2 = alkyl, alkoxy; L_1, L_2 = C1-24 alkylene, alkyleneoxy, single bond; Q_1, Q_2 = divalent linking group, single bond; Y = divalent 4-7 membered ring, its condensed ring; R_1, R_2, L_1, L_2 , and/or Y has ionic substituent; $n \geq 1$; $n' = 1-3$) are also claimed. The cells and the batteries using the compns. have high durability, photoelec. conversion characteristics, cycle performance, etc.

ST electrochem cell liq crystal polysiloxane electrolyte; photoelectrochem cell liq crystal polysiloxane electrolyte; **nonaq** battery liq crystal polysiloxane electrolyte

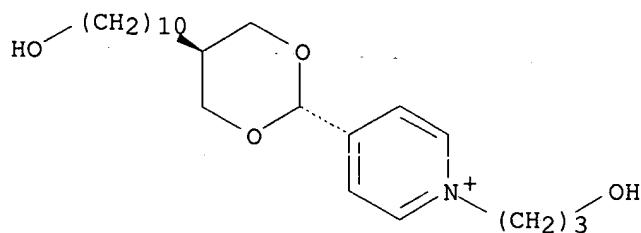
IT Battery electrolytes
 Electrochemical cells
 Liquid crystals, polymeric
 Photoelectrochemical cells
 Polyelectrolytes
 (liquid-crystalline polysiloxanes with ionic groups in electrolyte compns. for (photo)electrochem. cells and secondary **nonaq.** batteries)

IT Polysiloxanes, uses
RL: DEV (Device component use); IMF (Industrial manufacture); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(liquid-crystalline polysiloxanes with ionic groups in electrolyte compns.
for
(photo)electrochem. cells and secondary **nonaq.** batteries)
IT Secondary batteries
(lithium; liquid-crystalline polysiloxanes with ionic groups in
electrolyte compns. for (photo)electrochem. cells and secondary
nonaq. batteries)
IT 512773-47-6P
RL: DEV (Device component use); IMF (Industrial manufacture); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(liquid-crystalline polysiloxanes with ionic groups in electrolyte compns.
for
(photo)electrochem. cells and secondary **nonaq.** batteries)
IT 512773-51-2 **512773-53-4** **512773-56-7**
512773-58-9 512773-70-5 512773-73-8 512773-77-2
512773-92-1
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(liquid-crystalline polysiloxanes with ionic groups in **electrolyte**
compns. for (photo)electrochem. cells and secondary **nonaq.**
batteries)
IT **350507-46-9P** 512774-00-4P 512774-03-7P **512774-08-2P**
512774-14-0P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(liquid-crystalline polysiloxanes with ionic groups in **electrolyte**
compns. for (photo)electrochem. cells and secondary **nonaq.**
batteries)
IT 108-59-8, Dimethyl malonate 627-32-7 **872-85-5**,
4-Pyridinecarboxaldehyde 4667-38-3, Dichlorodioethoxysilane 88088-72-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(liquid-crystalline polysiloxanes with ionic groups in **electrolyte**
compns. for (photo)electrochem. cells and secondary **nonaq.**
batteries)
IT **512773-53-4** **512773-56-7** **512773-58-9**
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(liquid-crystalline polysiloxanes with ionic groups in **electrolyte**
compns. for (photo)electrochem. cells and secondary **nonaq.**
batteries)
RN 512773-53-4 HCPLUS
CN Pyridinium, 4-[trans-5-(10-hydroxydecyl)-1,3-dioxan-2-yl]-1-(3-
hydroxypropyl)-, iodide, polymer with dichlorodioethoxysilane (9CI) (CA
INDEX NAME)

CM 1

CRN 512774-14-0
CMF C22 H38 N O4 . I

Relative stereochemistry.

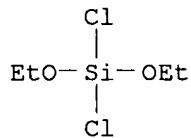


● I-

CM 2

CRN 4667-38-3

CMF C4 H10 Cl2 O2 Si



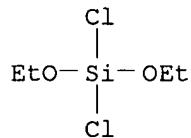
RN 512773-56-7 HCAPLUS

CN Pyridinium, 4-[trans-5-(10-hydroxydecyl)-1,3-dioxan-2-yl]-1-(3-hydroxypropyl)-, salt with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1), polymer with dichlorodioctylsilane (9CI) (CA INDEX NAME)

CM 1

CRN 4667-38-3

CMF C4 H10 Cl2 O2 Si



CM 2

CRN 521276-31-3

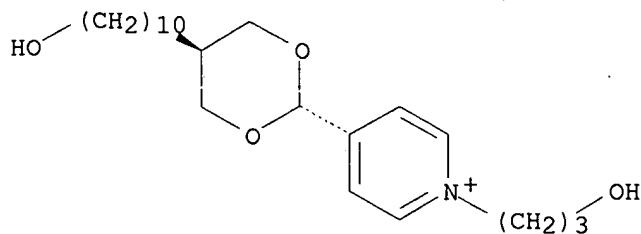
CMF C22 H38 N O4 . C2 F6 N O4 S2

CM 3

CRN 512773-55-6

CMF C22 H38 N O4

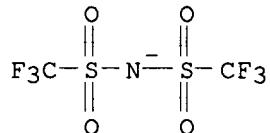
Relative stereochemistry.



CM 4

CRN 98837-98-0

CMF C2 F6 N O4 S2



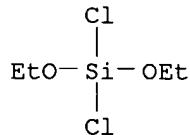
RN 512773-58-9 HCPLUS

CN Pyridinium, 4-[trans-5-(10-hydroxydecyl)-1,3-dioxan-2-yl]-1-(3-hydroxypropyl)-, tetrafluoroborate(1-), polymer with dichlorodioethoxysilane (9CI) (CA INDEX NAME)

CM 1

CRN 4667-38-3

CMF C4 H10 Cl2 O2 Si



CM 2

CRN 521276-40-4

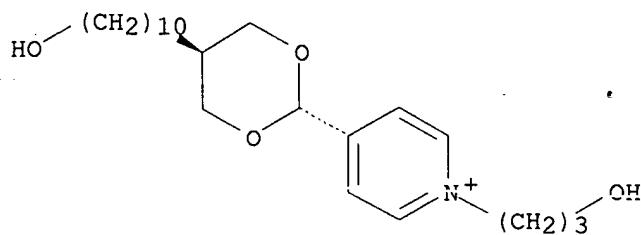
CMF C22 H38 N O4 . B F4

CM 3

CRN 512773-55-6

CMF C22 H38 N O4

Relative stereochemistry.

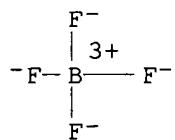


CM 4

CRN 14874-70-5

CMF B F4

CCI CCS



IT 350507-46-9P 512774-08-2P 512774-14-0P

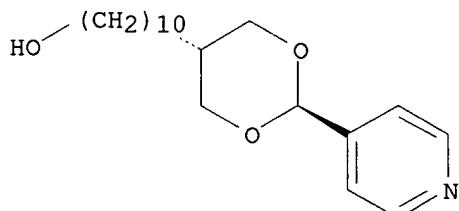
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(liquid-crystalline polysiloxanes with ionic groups in **electrolyte** compns. for (photo)electrochem. cells and secondary **nonaq.** batteries)

RN 350507-46-9 HCPLUS

CN 1,3-Dioxane-5-decanol, 2-(4-pyridinyl)-, trans- (9CI) (CA INDEX NAME)

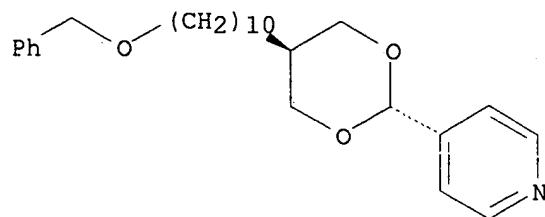
Relative stereochemistry.



RN 512774-08-2 HCPLUS

CN Pyridine, 4-[trans-5-[10-(phenylmethoxy)decyl]-1,3-dioxan-2-yl]- (9CI)
(CA INDEX NAME)

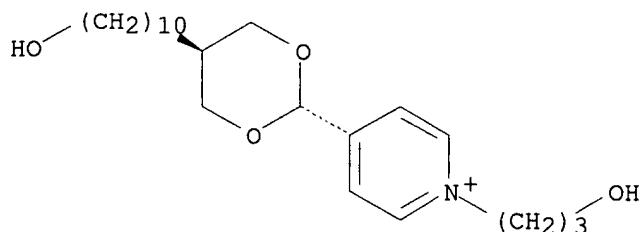
Relative stereochemistry.



RN 512774-14-0 HCAPLUS

CN Pyridinium, 4-[trans-5-(10-hydroxydecyl)-1,3-dioxan-2-yl]-1-(3-hydroxypropyl)-, iodide (9CI) (CA INDEX NAME)

Relative stereochemistry.



● I⁻

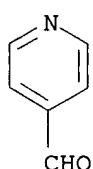
IT 872-85-5, 4-Pyridinecarboxaldehyde

RL: RCT (Reactant); RACT (Reactant or reagent)

(liquid-crystalline polysiloxanes with ionic groups in **electrolyte** compns. for (photo)electrochem. cells and secondary **nonaq.** batteries)

RN 872-85-5 HCAPLUS

CN 4-Pyridinecarboxaldehyde (9CI) (CA INDEX NAME)



L26 ANSWER 3 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2003:300775 HCAPLUS

DN 138:290461

TI Secondary **lithium** batteries using **lithium** nickel manganese oxide cathodes

IN Okada, Mikio

PA Japan Storage Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01M004-02; H01M004-58; H01M004-62
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------------|------|----------|-----------------|----------|
| PI JP 2003115324 | A2 | 20030418 | JP 2001-308766 | 20011004 |
| PRAI JP 2001-308766 | | 20011004 | | |

AB The batteries comprise $\text{Li}_{x}\text{Ni}_{y}\text{Mn}_{2-y}\text{O}_4$ ($x = 0-1$ $y = 0.45-0.6$) as cathodes, carbonaceous anodes, and **nonaqueous** electrolytes; wherein nitrogen-containing unsatd. cyclic compds. are included in the electrolytes to improve charge-discharge cycling performance. A part of Ni or Mn in the compound oxides may have been substituted with Co, Fe, Zn, Al, or V.

ST **lithium** battery electrolyte nitrogen unsatd heterocycle additive
 IT Battery cathodes
 Battery electrolytes
 Secondary batteries
 (secondary **lithium** batteries using **lithium** nickel manganese oxide cathodes and containing nitrogen-containing unsatd. heterocyclic additives in electrolytes)

IT 12031-75-3, **Lithium** manganese nickel oxide ($\text{LiMn}_{1.5}\text{Ni}_{0.5}\text{O}_4$)
 444727-97-3, **Lithium** manganese nickel oxide ($\text{Li}_{0.1}\text{Mn}_{1.4-1.55}\text{Ni}_{0.45-0.60}\text{O}_4$)

RL: TEM (Technical or engineered material use); USES (Uses)
 (cathodes; secondary **lithium** batteries using **lithium** nickel manganese oxide cathodes and containing nitrogen-containing unsatd. heterocyclic additives in electrolytes)

IT **108-47-4**, 2,4-Dimethylpyridine **108-48-5**,
 2,6-Dimethylpyridine **109-97-7**, Pyrrole **110-86-1**, Pyridine, uses
 120-73-0, Purine **288-13-1**, Pyrazole **289-80-5**, Pyridazine **289-95-2**,
 Pyrimidine **290-37-9**, Pyrazine **372-47-4**, 3-Fluoropyridine
372-48-5, 2-Fluoropyridine **583-58-4**,
 3,4-Dimethylpyridine **583-61-9**, 2,3-Dimethylpyridine
589-93-5, 2,5-Dimethylpyridine **591-22-0**,
 3,5-Dimethylpyridine **5453-67-8**, Dimethyl-2,6-pyridine dicarboxylate **6269-24-5**, Methyl-3-pyridyl carbamate
 36118-45-3, Pyrazoline **39455-90-8**, Pyrazolone **67242-59-5**, N-Methyl-N-(2-pyridyl)formamide

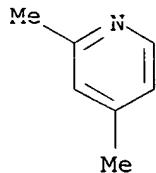
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (**electrolyte** additive; secondary **lithium** batteries using **lithium** nickel manganese oxide cathodes and containing nitrogen-containing unsatd. heterocyclic additives in **electrolytes**)

IT **108-47-4**, 2,4-Dimethylpyridine **108-48-5**,
 2,6-Dimethylpyridine **372-47-4**, 3-Fluoropyridine **372-48-5**,
 , 2-Fluoropyridine **583-58-4**, 3,4-Dimethylpyridine
583-61-9, 2,3-Dimethylpyridine **589-93-5**,
 2,5-Dimethylpyridine **591-22-0**, 3,5-Dimethylpyridine
5453-67-8, Dimethyl-2,6-pyridine dicarboxylate **6269-24-5**, Methyl-3-pyridyl carbamate **67242-59-5**, N-Methyl-N-(2-pyridyl)formamide

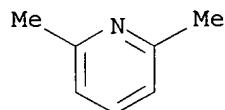
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (**electrolyte** additive; secondary **lithium** batteries using **lithium** nickel manganese oxide cathodes and containing

nitrogen-containing unsatd. heterocyclic additives in electrolytes
)

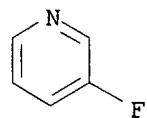
RN 108-47-4 HCAPLUS
CN Pyridine, 2,4-dimethyl- (9CI) (CA INDEX NAME)



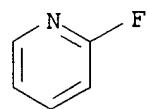
RN 108-48-5 HCAPLUS
CN Pyridine, 2,6-dimethyl- (9CI) (CA INDEX NAME)



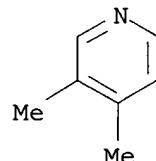
RN 372-47-4 HCAPLUS
CN Pyridine, 3-fluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



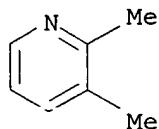
RN 372-48-5 HCAPLUS
CN Pyridine, 2-fluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



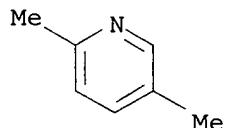
RN 583-58-4 HCAPLUS
CN Pyridine, 3,4-dimethyl- (9CI) (CA INDEX NAME)



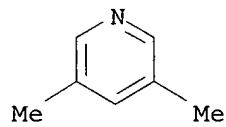
RN 583-61-9 HCAPLUS
CN Pyridine, 2,3-dimethyl- (9CI) (CA INDEX NAME)



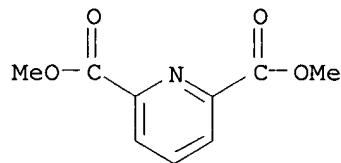
RN 589-93-5 HCAPLUS
CN Pyridine, 2,5-dimethyl- (9CI) (CA INDEX NAME)



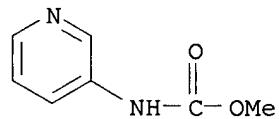
RN 591-22-0 HCAPLUS
CN Pyridine, 3,5-dimethyl- (9CI) (CA INDEX NAME)



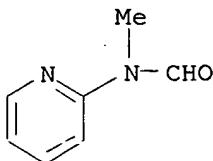
RN 5453-67-8 HCAPLUS
CN 2,6-Pyridinedicarboxylic acid, dimethyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 6269-24-5 HCAPLUS
CN Carbamic acid, 3-pyridinyl-, methyl ester (9CI) (CA INDEX NAME)



RN 67242-59-5 HCAPLUS
CN Formamide, N-methyl-N-2-pyridinyl- (9CI) (CA INDEX NAME)



L26 ANSWER 4 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
 AN 2003:167055 HCPLUS
 DN 138:207820
 TI Electrolyte compositions and their use in electrochemical cells, photoelectrochemical cells, and secondary **nonaqueous** batteries
 IN Yasuda, Takayasu; Wariishi, Koji
 PA Fuji Photo Film Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 30 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C08L083-06
 ICS C08K005-00; C08L101-12; H01B001-06; H01M006-18; H01M010-40;
 H01M014-00
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38, 75

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------------|--|----------|-----------------|----------|
| PI JP 2003064259 | A2 | 20030305 | JP 2001-256050 | 20010827 |
| PRAI JP 2001-256050 | | 20010827 | | |
| AB | The compns. comprise polysiloxanes having repeating units Si(OR ₁)(OR ₂)O (R ₁ , R ₂ = alkyl, alkyleneoxy) and liquid-crystalline ionic compds., e.g., compds. having mesogen-containing anions and (in)organic cations. The photoelectrochem. | | | |
| | cells have charge-transporting layers containing the electrolyte compns., dye-sensitized semiconductor-containing photosensitive layers, and electrodes on conductive supports. The nonvolatile compns. have high durability, ion conductivity, and charge-transporting property and give the cells and the batteries with good cycle performance, photoelec. conversion, etc. | | | |
| ST | photoelectrochem cell electrolyte polysiloxane liq cryst ionic compd; battery electrolyte polysiloxane liq cryst ionic compd | | | |
| IT | Battery electrolytes Electrochemical cells Liquid crystals Liquid crystals, polymeric Photoelectrochemical cells (electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries) | | | |
| IT | Polysiloxanes, uses RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses) (electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries) | | | |
| IT | Secondary batteries | | | |

(lithium; electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

IT 500163-09-7P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

IT 180027-63-8 189282-51-7 189282-53-9, Poly[oxy(diethoxysilylene)]

444025-85-8, Poly[oxy(dimethoxysilylene)] 500163-11-1

500163-14-4 500163-16-6 500163-18-8 500163-19-9

500163-21-3 500163-22-4 500163-24-6 500163-26-8

500163-30-4 500163-32-6 500163-33-7

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

IT 85689-41-4P 139475-37-9P 202813-37-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

IT 108-59-8, Dimethyl malonate 112-29-8, 1-Bromodecane 638-45-9

872-85-5, 4-Pyridinecarboxaldehyde

RL: RCT (Reactant); RACT (Reactant or reagent)

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

IT 500163-09-7P

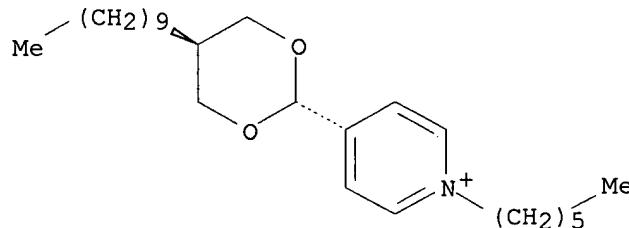
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

RN 500163-09-7 HCPLUS

CN Pyridinium, 4-(trans-5-decy1-1,3-dioxan-2-yl)-1-hexyl-, iodide (9CI) (CA INDEX NAME)

Relative stereochemistry.



● I-

IT 500163-11-1 500163-14-4 500163-22-4

500163-24-6

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq batteries)

RN 500163-11-1 HCPLUS

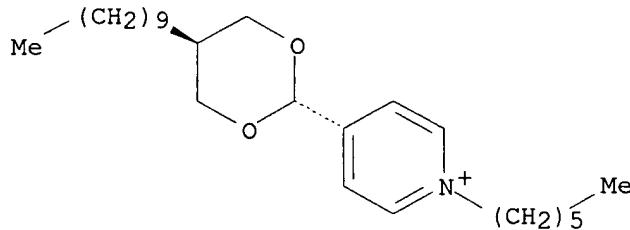
CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-hexyl-, salt with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 500163-10-0

CMF C25 H44 N O2

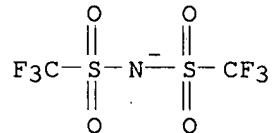
Relative stereochemistry.



CM 2

CRN 98837-98-0

CMF C2 F6 N O4 S2



RN 500163-14-4 HCPLUS

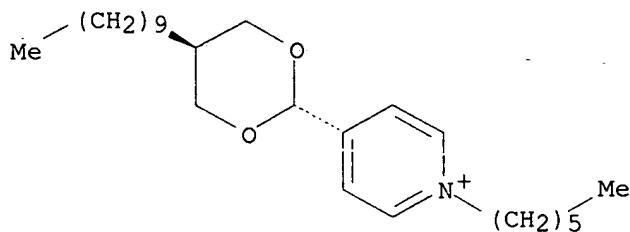
CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-hexyl-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 500163-10-0

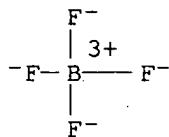
CMF C25 H44 N O2

Relative stereochemistry.

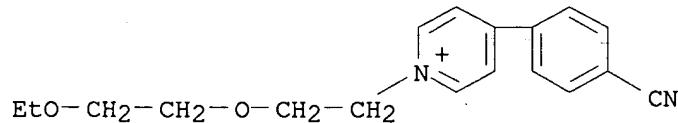


CM 2

CRN 14874-70-5
CMF B F4
CCI CCS



RN 500163-22-4 HCAPLUS
CN Pyridinium, 4-(4-cyanophenyl)-1-[2-(2-ethoxyethoxy)ethyl]-, iodide (9CI)
(CA INDEX NAME)



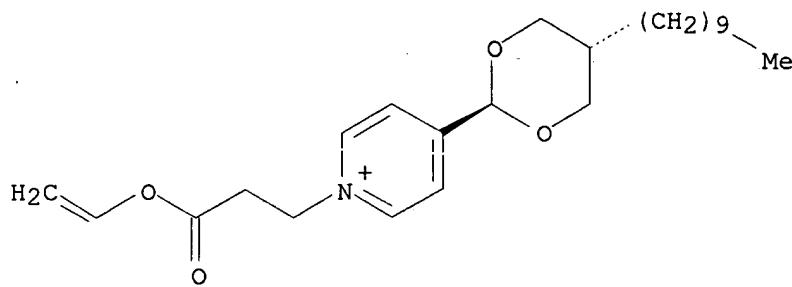
● I⁻

RN 500163-24-6 HCAPLUS
CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-[3-(ethenyloxy)-3-oxopropyl]-, iodide, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 500163-23-5
CMF C24 H38 N O4 . I

Relative stereochemistry.



● I⁻

IT 202813-37-4P

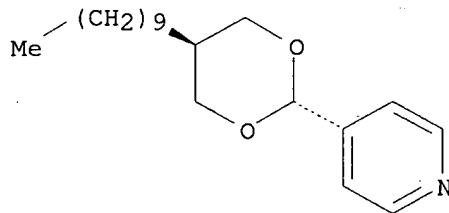
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq batteries)

RN 202813-37-4 HCAPLUS

CN Pyridine, 4-(trans-5-decyl-1,3-dioxan-2-yl)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



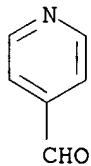
IT 872-85-5, 4-Pyridinecarboxaldehyde

RL: RCT (Reactant); RACT (Reactant or reagent)

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq batteries)

RN 872-85-5 HCAPLUS

CN 4-Pyridinecarboxaldehyde (9CI) (CA INDEX NAME)



L26 ANSWER 5 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 2003:58416 HCAPLUS

KATHLEEN FULLER EIC 1700/PARKER LAW 308-4290

DN 138:124987
 TI **Nonaqueous** electrolyte solution and secondary battery using the solution
 IN Takehara, Masahiro; Fujii, Takashi; Kotato, Minoru; Noda, Daisuke; Kinoshita, Shinichi; Ue, Makoto; Suzuki, Hitoshi
 PA Mitsubishi Chemical Corporation, Japan
 SO PCT Int. Appl., 61 pp.
 CODEN: PIXXD2
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01M004-02; H01M004-58; H01M004-48
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|----------|
| PI | WO 2003007416 | A1 | 20030123 | WO 2002-JP6906 | 20020708 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| | RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| EP | 1317013 | A1 | 20030604 | EP 2002-745873 | 20020708 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, BG, CZ, EE | | | | |
| JP | 2003092137 | A2 | 20030328 | JP 2002-200364 | 20020709 |
| US | 2003165733 | A1 | 20030904 | US 2003-383555 | 20030310 |
| PRAI | JP 2001-208992 | A | 20010710 | | |
| | JP 2001-214638 | A | 20010716 | | |
| | WO 2002-JP6906 | W | 20020708 | | |
| AB | The electrolyte solution has a Li salt dissolved in a lactone based nonaq. solvent mixture, where the solution contains ≤ 1 mmol hydroxy carboxylic acid/kg. The electrolyte solution may also contain a N heterocyclic compound. The battery is a secondary Li battery. | | | | |
| ST | secondary lithium battery electrolyte lactone solvent hydroxy carboxylic acid | | | | |
| IT | Battery electrolytes (nonaq. electrolyte solns. with low hydroxy carboxylic acid contents for secondary lithium batteries) | | | | |
| IT | 80-73-9, 1,3-Dimethyl-2-imidazolidinone 88-12-0, uses 91-22-5, Quinoline, uses 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 96-54-8, 1-Methylpyrrole 109-06-8 , α -Picoline 110-86-1, Pyridine, uses 289-80-5, Pyridazine 289-96-3, 1,2,3-Triazine 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 872-50-4, 1-Methylpyrrolidone, uses 3741-38-6, Ethylene sulfite 4427-92-3, Phenyl ethylene carbonate 14283-07-9, Lithium fluoroborate 19836-78-3 21324-40-3, Lithium hexafluorophosphate 38222-83-2 , 2,6-Di-tert-butyl-4-methylpyridine | | | | |
| | RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte solns. with low hydroxy carboxylic acid contents for secondary lithium batteries) | | | | |
| IT | 591-81-1, γ -Hydroxybutyric acid 122525-99-9, Zonyl fso-100 | | | | |

RL: MSC (Miscellaneous)

(**nonaq.** electrolyte solns. with low hydroxy carboxylic acid contents for secondary lithium batteries)

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Denso Corp; JP 10-50344 A 1998 HCPLUS
- (2) Fujitsu Ltd; JP 09-106833 A 1997 HCPLUS
- (3) Fujitsu Ltd; JP 09-204932 A 1998 HCPLUS
- (4) Fujitsu Ltd; US 5731106 A 1998 HCPLUS
- (5) Hitachi Maxell Ltd; JP 62-217578 A 1987 HCPLUS
- (6) Japan Storage Battery Co Ltd; JP 200160464 A 2001
- (7) Matsushita Electric Industrial Co Ltd; JP 07-283083 A 1995 HCPLUS
- (8) Matsushita Electric Industrial Co Ltd; JP 08-321438 A 1996 HCPLUS
- (9) Matsushita Electric Industrial Co Ltd; JP 08-321440 A 1996 HCPLUS
- (10) Mitsubishi Chemical Corp; JP 2001126762 A 2001 HCPLUS
- (11) Sanyo Electric Co Ltd; JP 07-105977 A 1995 HCPLUS
- (12) Sony Corp; JP 05-315006 A 1993 HCPLUS
- (13) Sony Corp; JP 07-211351 A 1995 HCPLUS
- (14) Tonen Corp; JP 11-185810 A 1999 HCPLUS
- (15) Toshiba Corp; JP 2000235868 A 2000 HCPLUS
- (16) Ube Industries Ltd; JP 10-270075 A 1998 HCPLUS
- (17) Ube Industries Ltd; JP 10-270074 A 2000 HCPLUS
- (18) Ube Industries Ltd; US 6045945 A 2000 HCPLUS
- (19) Ube Industries Ltd; JP 200152741 A 2001

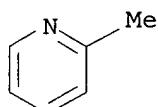
IT 109-06-8, α -Picoline 38222-83-2,
2,6-Di-tert-butyl-4-methylpyridine

RL: DEV (Device component use); USES (Uses)

(**nonaq.** electrolyte solns. with low hydroxy carboxylic acid contents for secondary lithium batteries)

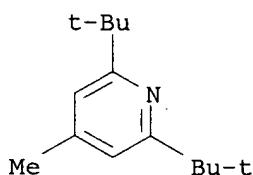
RN 109-06-8 HCPLUS

CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



RN 38222-83-2 HCPLUS

CN Pyridine, 2,6-bis(1,1-dimethylethyl)-4-methyl- (9CI) (CA INDEX NAME)



L26 ANSWER 6 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN

AN 2002:945140 HCPLUS

DN 138:26910

TI Secondary **nonaqueous** electrolyte battery and the
nonaqueous electrolyte solution

IN Takehara, Masahiro; Fujii, Takashi; Kinoshita, Shinichi; Ue, Makoto

PA Mitsubishi Chemical Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------------|------|----------|-----------------|----------|
| PI JP 2002359002 | A2 | 20021213 | JP 2001-162306 | 20010530 |
| PRAI JP 2001-162306 | | 20010530 | | |

AB The battery is a Li battery, and the electrolyte solution uses a lactone based nonaq. solvent mixture containing 0.1-10% aromatic N-containing heterocyclic compound

ST secondary lithium battery electrolyte solvent compn; lactone nitrogen heterocyclic compd battery electrolyte solvent

IT Battery electrolytes

(nonaq. solvent mixts. containing aromatic nitrogen heterocyclic compds. for secondary lithium battery electrolyte solns.)

IT 91-22-5, Quinoline, uses 96-48-0, γ -Butyrolactone 96-54-8, 1-Methylpyrrole 109-06-8, α -Picoline 289-80-5, Pyridazine 289-96-3, 1,2,3-Triazine 872-36-6, Vinylene carbonate 14283-07-9, Lithium fluoroborate 38222-83-2,

2,6-Di-tert-butyl-4-methylpyridine

RL: DEV (Device component use); USES (Uses)

(nonaq. solvent mixts. containing aromatic nitrogen heterocyclic compds. for secondary lithium battery electrolyte solns.)

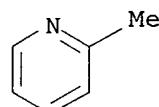
IT 109-06-8, α -Picoline 38222-83-2, 2,6-Di-tert-butyl-4-methylpyridine

RL: DEV (Device component use); USES (Uses)

(nonaq. solvent mixts. containing aromatic nitrogen heterocyclic compds. for secondary lithium battery electrolyte solns.)

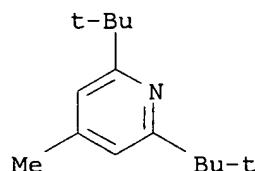
RN 109-06-8 HCPLUS

CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



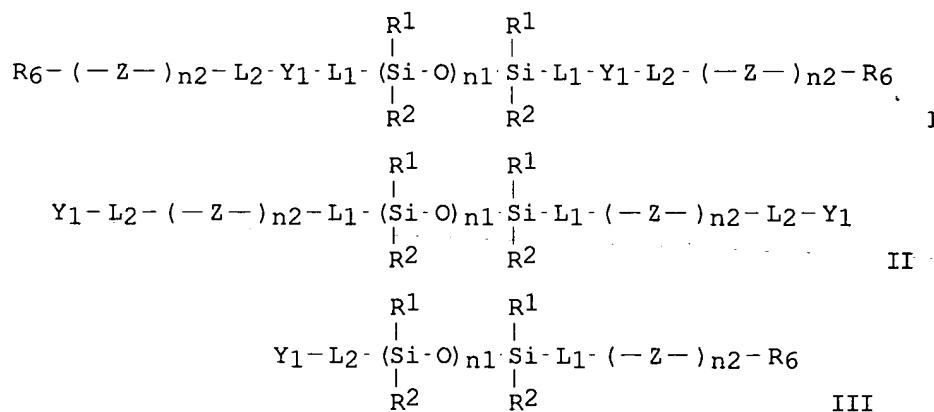
RN 38222-83-2 HCPLUS

CN Pyridine, 2,6-bis(1,1-dimethylethyl)-4-methyl- (9CI) (CA INDEX NAME)



L26 ANSWER 7 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2002:673113 HCAPLUS
 DN 137:219505
 TI Electrolyte composition, battery, photoelectrochemical cell, secondary
nonaqueous electrolyte battery, and liquid crystal compounds
 IN Ono, Michio; Yasuda, Takayasu; Wariishi, Koji
 PA Fuji Photo Film Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 32 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01B001-06
 ICS C08L083-04; H01M010-40; H01M014-00
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----------------------|------|----------|-----------------|----------|
| PI JP 2002251916 | A2 | 20020906 | JP 2001-47041 | 20010222 |
| PRAI JP 2001-47041 | | 20010222 | | |
| OS MARPAT 137:219505 | | | | |
| GI | | | | |



$$\text{Z} = \text{Q}_{131} - \text{Y}_{111} - \text{Q}_{121}$$

AB The electrolyte contains a liquid crystal compound having cation and/or anion containing repeating units $-(\text{SiR}_1\text{R}_2-\text{O})_{n1}$, where R1 and R2 = (substituted) alkyl groups, $n1 \geq 3$. The liquid crystal compound is I, II, or III, where the R6 = H or a substituent group, Y111= bivalent (4-7)- membered ring, Q121 and Q131 = bivalent junction group or single bond, n2 = 1, 2, or 3, (n = 2 or 3 the ≥ 1 of Y111, Q121, or Q131 in the compound can be different from each other), and X1 is the counter ion for Y1. Batteries, secondary **nonaq.** batteries, and photoelectrochem. cells use the electrolyte.

ST secondary battery electrolyte liq crystal compd; photoelectrochem cell electrolyte liq crystal compd

IT Battery electrolytes

Liquid crystals

Photoelectrochemical cells

(compns. of electrolytes containing liquid crystal compds. for secondary lithium batteries and photoelectrochem. cells)

IT 311-28-4, Tetrabutylammonium iodide 14283-07-9, Lithium
 fluoroborate 65039-05-6 90076-65-6 **455934-78-8**
455934-80-2 455934-81-3 455934-83-5 455934-84-6
 455934-85-7 455934-87-9 455934-88-0 455934-89-1 455934-90-4
 455934-91-5 455934-93-7 455934-95-9 455934-97-1 **455951-19-6**
455951-26-5

RL: DEV (Device component use); USES (Uses)

(compns. of **electrolytes** containing liquid crystal compds. for secondary **lithium** batteries and photoelectrochem. cells)

IT **455934-78-8** **455934-80-2** **455951-19-6**
455951-26-5

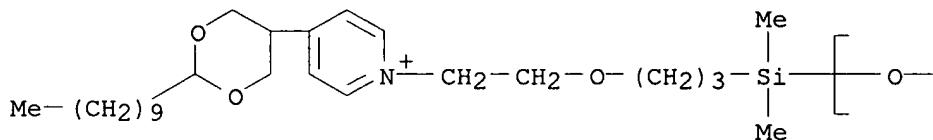
RL: DEV (Device component use); USES (Uses)

(compns. of **electrolytes** containing liquid crystal compds. for secondary **lithium** batteries and photoelectrochem. cells)

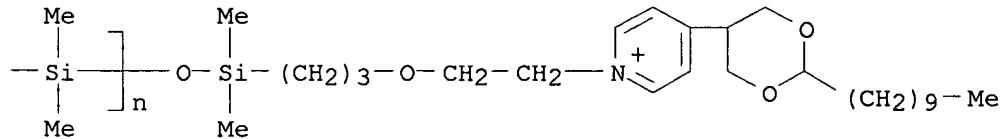
RN 455934-78-8 HCPLUS

CN Poly[oxy(dimethylsilylene)], α -[[3-[2-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]ethoxy]propyl]dimethylsilyl]- ω -[[[3-[2-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]ethoxy]propyl]dimethylsilyl]oxy]-, diiodide (9CI) (CA INDEX NAME)

PAGE 1-A

●2 I⁻

PAGE 1-B



RN 455934-80-2 HCPLUS

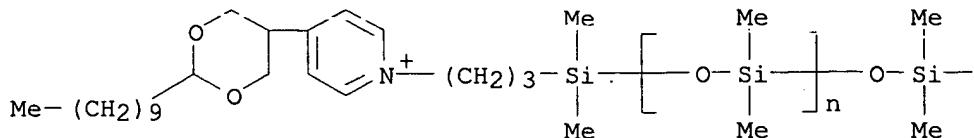
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, ion(1-), α -[[3-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]propyl]dimethylsilyl]- ω -[[[3-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]propyl]dimethylsilyl]oxy]poly[oxy(dimethylsilylene)] (2:1) (9CI) (CA INDEX NAME)

CM 1

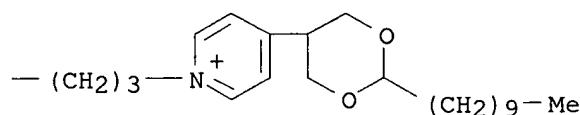
CRN 455934-79-9

CMF (C₂ H₆ O Si)_n C₄₈ H₈₆ N₂ O₅ Si₂
 CCI PMS

PAGE 1-A

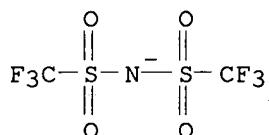


PAGE 1-B



CM 2

CRN 98837-98-0
 CMF C₂ F₆ N O₄ S₂

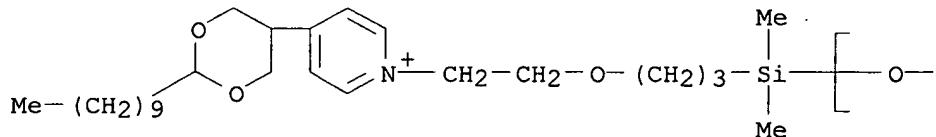


RN 455951-19-6 HCAPLUS
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[{(trifluoromethyl)sulfonyl]-, ion(1-), α -[[3-[2-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]ethoxy]propyl]dimethylsilyl]- ω -[[[3-[2-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]ethoxy]propyl]dimethylsilyl]oxy]poly[oxy(dimethylsilylene)] (2:1) (9CI) (CA INDEX NAME)

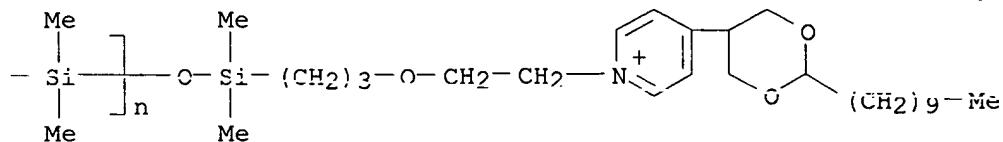
CM 1

CRN 455951-18-5
 CMF (C₂ H₆ O Si)_n C₅₂ H₉₄ N₂ O₇ Si₂
 CCI PMS

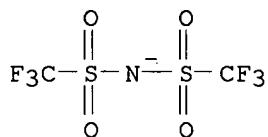
PAGE 1-A



PAGE 1-B



CM 2

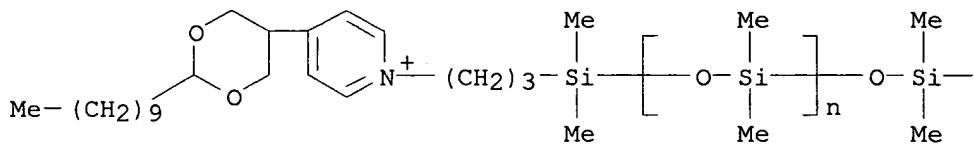
CRN 98837-98-0
CMF C2 F6 N O4 S2

RN 455951-26-5 HCAPLUS
 CN Poly[oxy(dimethylsilylene)], α -[[3-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]propyl]dimethylsilyl]- ω -[[[3-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]propyl]dimethylsilyl]oxy]-, bis[tetrafluoroborate(1-)] (9CI) (CA INDEX NAME)

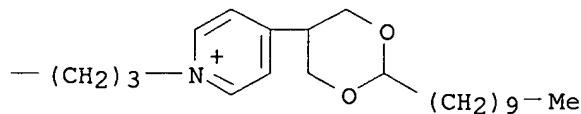
CM 1

CRN 455934-79-9
CMF (C2 H6 O Si)n C48 H86 N2 O5 Si2
CCI PMS

PAGE 1-A

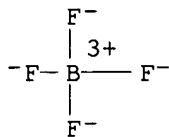


PAGE 1-B



CM 2

CRN 14874-70-5
 CMF B F4
 CCI CCS



L26 ANSWER 8 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2002:656355 HCAPLUS
 DN 137:203955
 TI Electrolyte composition, battery, photoelectrochemical cell, and secondary **nonaqueous** electrolyte battery
 IN Ono, Michio
 PA Fuji Photo Film Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 28 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01M014-00
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--------------------|---|----------|-----------------|----------|
| PI JP 2002246066 | A2 | 20020830 | JP 2001-38118 | 20010215 |
| PRAI JP 2001-38118 | | 20010215 | | |
| AB | The electrolyte contains a polyoxyalkylene, having liquid crystalline cationic or anionic side chain or liquid crystalline counter ions. The polyoxyalkylene is -(CH ₂ -CHA-O)-.y h (A = cationic or anionic group, y = counter ion) and optionally -(CH ₂ -CHR-O)- [R = H, (substituted) alkyl, or (substituted) aryl group]. Batteries, secondary nonaq. batteries, and photoelectrochem. cells use the electrolyte. | | | |
| ST | polyoxyalkylene liq cryst side chain counter ion electrolyte; battery electrolyte liq cryst polyoxyalkylene; photoelectrochem cell electrolyte liq cryst polyoxyalkylene | | | |
| IT | Battery electrolytes Photoelectrochemical cells (polyoxyalkylene with liquid crystalline ionic side chains or counter ions for electrolytes in batteries and photoelectrochem. cells) | | | |
| IT | 14283-07-9, Lithium fluoroborate 33454-82-9, Lithium trifluoromethanesulfonate 452977-20-7 452977-22-9 452977-23-0 452977-25-2 452977-27-4 452977-29-6 452977-32-1 452977-34-3 452977-37-6 452977-39-8 452977-42-3 452977-44-5 452977-47-8 452977-49-0 452977-52-5 452977-56-9 | | | |
| for | RL: DEV (Device component use); PRP (Properties); USES (Uses) (polyoxyalkylene with liquid crystalline ionic side chains or counter ions for electrolytes in batteries and photoelectrochem. cells) | | | |

IT 452977-20-7 452977-22-9 452977-23-0

452977-25-2 452977-27-4

RL: DEV (Device component use); PRP (Properties); USES (Uses)
(polyoxyalkylene with liquid crystalline ionic side chains or counter ions
for

electrolytes in batteries and photoelectrochem. cells)

RN 452977-20-7 HCPLUS

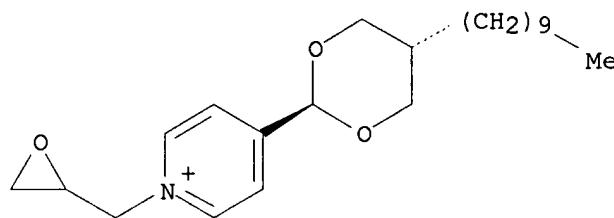
CN Pyridinium, 4-(trans-5-decy1-1,3-dioxan-2-yl)-1-(oxiranylmethyl)-, iodide,
homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 452977-19-4

CMF C22 H36 N O3 . I

Relative stereochemistry.



● I -

RN 452977-22-9 HCPLUS

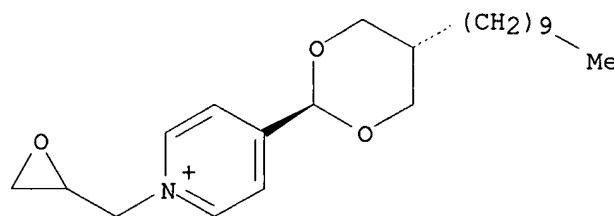
CN Pyridinium, 4-(trans-5-decy1-1,3-dioxan-2-yl)-1-(oxiranylmethyl)-, salt
with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide
(1:1), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 452977-21-8

CMF C22 H36 N O3

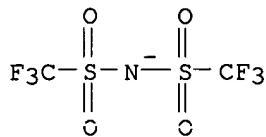
Relative stereochemistry.



CM 2

CRN 98837-98-0

CMF C2 F6 N O4 S2



RN 452977-23-0 HCPLUS

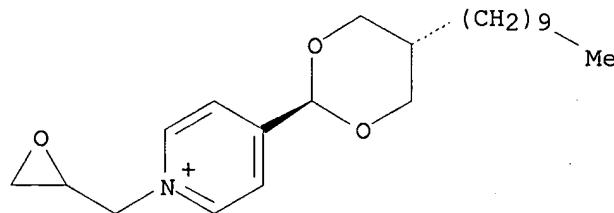
CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-(oxiranylmethyl)-, iodide,
polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 452977-19-4

CMF C22 H36 N O3 . I

Relative stereochemistry.



● I⁻

CM 2

CRN 75-21-8

CMF C2 H4 O



RN 452977-25-2 HCPLUS

CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-(oxiranylmethyl)-, salt
with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide
(1:1), polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-21-8

CMF C2 H4 O



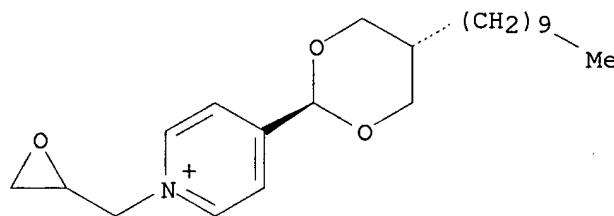
CM 2

CRN 452977-24-1
CMF C22 H36 N O3 . C2 F6 N O4 S2

CM 3

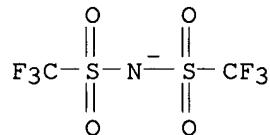
CRN 452977-21-8
CMF C22 H36 N O3

Relative stereochemistry.



CM 4

CRN 98837-98-0
CMF C2 F6 N O4 S2



RN 452977-27-4 HCPLUS

CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-(oxiranymethyl)-, tetrafluoroborate(1-), polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-21-8
CMF C2 H4 O



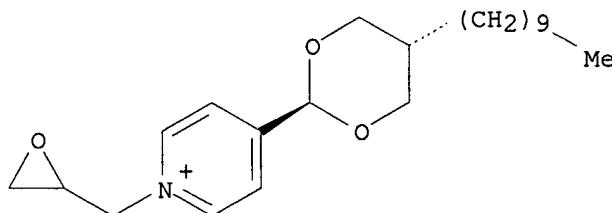
CM 2

CRN 452977-26-3
 CMF C22 H36 N O3 . B F4

CM 3

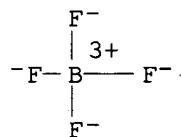
CRN 452977-21-8
 CMF C22 H36 N O3

Relative stereochemistry.



CM 4

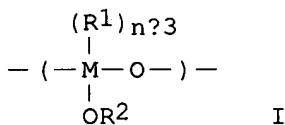
CRN 14874-70-5
 CMF B F4
 CCI CCS



L26 ANSWER 9 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
 AN 2002:656112 HCPLUS
 DN 137:203950
 TI Method for preparation of electrolyte composition for **nonaqueous** electrolyte secondary battery
 IN Wariishi, Koji; Yasuda, Takayasu; Senga, Takeshi
 PA Fuji Photo Film Co., Ltd., Japan
 SO Eur. Pat. Appl., 65 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 IC ICM H01M010-36
 ICS H01M010-40; C08L083-00; C08G077-00
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 35, 38
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| PI EP 1235294 | A2 | 20020828 | EP 2002-3925 | 20020221 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |

| | | | | |
|----------------------|----|----------|---------------|----------|
| JP 2002252030 | A2 | 20020906 | JP 2001-46723 | 20010222 |
| JP 2002298918 | A2 | 20021011 | JP 2001-97417 | 20010329 |
| US 2002155354 | A1 | 20021024 | US 2002-80067 | 20020222 |
| PRAI JP 2001-46723 | A | 20010222 | | |
| JP 2001-97417 | A | 20010329 | | |
| OS MARPAT 137:203950 | | | | |
| GI | | | | |



- AB An electrolyte composition that contains a molten salt, having a specific structure (I), a silicon polymer, and a salt of a metal ion of Group 1 or 2 of the Periodic Table; and a **nonaq.** electrolyte secondary cell containing the electrolyte composition are disclosed. Also disclosed are an electrolyte composition that contains a polymer compound having repetitive units of a structure of the formula I, and a salt of a metal ion of Group 1 or 2 of the Periodic Table; a method for producing the electrolyte composition; and a **nonaq.** electrolyte secondary cell containing the electrolyte composition
- ST battery **nonaq** electrolyte siloxane polymer
- IT Battery electrolytes
Ionic conductivity
Secondary batteries
(method for preparation of electrolyte composition for **nonaq.** electrolyte secondary battery)
- IT Silicates, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(method for preparation of electrolyte composition for **nonaq.** electrolyte secondary battery)
- IT 143314-16-3 174899-82-2 324574-91-6 **344790-86-9**
RL: DEV (Device component use); USES (Uses)
(method for preparation of **electrolyte** composition for **nonaq.** electrolyte secondary battery)
- IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6, Lithium triflimide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(method for preparation of electrolyte composition for **nonaq.** electrolyte secondary battery)
- IT 450358-41-5P 450358-41-5P
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(method for preparation of electrolyte composition for **nonaq.** electrolyte secondary battery)
- IT 450358-42-6P 450358-42-6P 450358-43-7P 450358-43-7P 450358-44-8P
450358-44-8P 450358-45-9P 450358-45-9P 450358-46-0P 450358-46-0P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(method for preparation of electrolyte composition for **nonaq.**)

electrolyte secondary battery)

IT 344790-86-9

RL: DEV (Device component use); USES (Uses)

(method for preparation of electrolyte composition for nonaq.
electrolyte secondary battery)

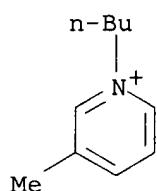
RN 344790-86-9 HCAPLUS

CN Pyridinium, 1-butyl-3-methyl-, salt with 1,1,1-trifluoro-N-[
(trifluoromethyl)sulfonyl]methanesulfonamide (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 125867-77-8

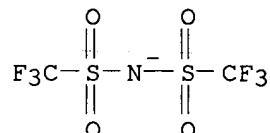
CMF C10 H16 N



CM 2

CRN 98837-98-0

CMF C2 F6 N O4 S2



L26 ANSWER 10 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2002:553509 HCAPLUS

DN 137:127526

TI Electrolyte composition with high ion conductivity and high ion transport
number and nonaqueous electrolyte secondary batteries

IN Wariishi, Koji; Sen, Masakazu; Ono, Michio

PA Fuji Photo Film Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 24 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

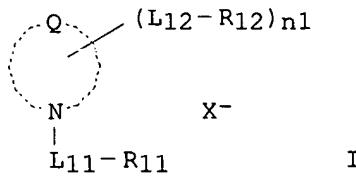
ICS H01M010-40; C09K003-16; H01B001-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| JP 2002208433 | A2 | 20020726 | JP 2001-325587 | 20011023 |

PRAI JP 2000-323202 A 20001023
 OS MARPAT 137:127526
 GI



- AB The compns. contain (A) ≥1 compds. selected from I,
 $R_{21}L_{21}A+(L_{22}R_{22})(L_{23}R_{23})(L_{24}R_{24})$ X- and $R_{31}L_{31}N+(L_{32}R_{32}):C[N(L_{33}R_{33})(L_{34}R_34)][N(L_{35}R_{35})(L_{36}R_{36})]$ X- (Q = group for forming 5- or 6-membered aromatic cation; L₁₁-12, L₂₁-24, L₃₁-36 = (un)substituted alkylene(oxy) and/or alkenylene(oxy); R₁₁-12, R₂₁-24, R₃₁-36 = H, OM(OR)_n, may form ring; ≥1 of R₁₁-12, R₂₁-24, R₃₁-36 = OM(OR)_n; R = (un)substituted alkyl or aryl; M = Si, B, Ti, Al, Ge, Sn; n₁ = 0, natural number; X- = anion) and (B) salts of Group IA or IIA ions. Preferable Markush structures for I are further specified. Also claimed are solid electrolyte compns. containing crosslinked compds. of component A, obtained by reaction of A with compds. having ≥2 nucleophilic groups in a mol., instead of component A.
Nonaq. electrolyte secondary batteries with the said electrolyte compns. are also claimed. Batteries with high capacity and excellent cycle characteristics are obtained.
- ST nonaq electrolyte compn secondary battery; imidazolinium salt
 nonaq electrolyte secondary battery; quaternary ammonium
 nonaq electrolyte secondary battery; polyoxyalkylene ionene polymer solid electrolyte battery
- IT Battery electrolytes
 Polymer electrolytes
 Solid state secondary batteries
 (ammonium compound-Li salt mixts. or their crosslinked solids as electrolytes for nonaq. secondary batteries)
- IT Polyoxyalkylenes, uses
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (ionene-, lithium complex; ammonium compound-Li salt mixts. or their crosslinked solids as electrolytes for nonaq. secondary batteries)
- IT Secondary batteries
 (nonaq. electrolyte; ammonium compound-Li salt mixts. or their crosslinked solids as electrolytes for nonaq. secondary batteries)
- IT Ionene polymers
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (polyoxyalkylene-, lithium complex; ammonium compound-Li salt mixts. or their crosslinked solids as electrolytes for nonaq. secondary batteries)
- IT 7439-93-2DP, **Lithium**, polyoxyalkylene-ionene polymer complexes 444045-88-9P 444045-89-0P 444045-91-4P 444046-10-0DP, **lithium** complex 444046-11-1DP, **lithium** complex 444046-12-2DP, **lithium** complex 444046-14-4DP, **lithium** complex 444046-15-5DP, **lithium** complex 444046-16-6DP,

lithium complex 444046-17-7DP, lithium complex
444046-18-8DP, lithium complex 444046-19-9DP, lithium
complex 444046-20-2DP, lithium complex 444046-21-3DP,
lithium complex
RL: DEV (Device component use); IMF (Industrial manufacture); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(ammonium compound-Li salt mixts. or their crosslinked solids
as **electrolytes** for **nonaq.** secondary batteries)

IT 90076-65-6
RL: DEV (Device component use); RCT (Reactant); TEM (Technical or
engineered material use); RACT (Reactant or reagent); USES (Uses)
(ammonium compound-Li salt mixts. or their crosslinked solids
as **electrolytes** for **nonaq.** secondary batteries)

IT 444045-96-9 444045-97-0 444045-98-1 444045-99-2 444046-01-9
444046-02-0 **444046-03-1** 444046-04-2 444046-05-3
444046-07-5 444046-09-7
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(ammonium compound-Li salt mixts. or their crosslinked solids
as **electrolytes** for **nonaq.** secondary batteries)

IT 444045-79-8P 444045-80-1P 444045-81-2P 444045-82-3P 444045-83-4P
444045-84-5P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(ammonium compound-Li salt mixts. or their crosslinked solids
as **electrolytes** for **nonaq.** secondary batteries)

IT 444045-86-7P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(ammonium compound-Li salt mixts. or their crosslinked solids
as **electrolytes** for **nonaq.** secondary batteries)

IT 74-88-4, Methyl iodide, reactions 105-59-9, N-Methyldiethanolamine
624-76-0, Iodoethanol 998-30-1, Triethoxysilane 1615-14-1,
1H-Imidazole-1-ethanol 7783-93-9, Silver perchlorate 13439-84-4,
Pentamethylguanidine 14104-20-2, Silver tetrafluoroborate
RL: RCT (Reactant); RACT (Reactant or reagent)
(ammonium compound-Li salt mixts. or their crosslinked solids
as **electrolytes** for **nonaq.** secondary batteries)

IT 7791-03-9, **Lithium**'perchlorate 14283-07-9, **Lithium**
tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate
444045-93-6 444045-95-8
RL: TEM (Technical or engineered material use); USES (Uses)
(ammonium compound-Li salt mixts. or their crosslinked solids
as **electrolytes** for **nonaq.** secondary batteries)

IT **444046-17-7DP, lithium complex**
RL: DEV (Device component use); IMF (Industrial manufacture); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(ammonium compound-Li salt mixts. or their crosslinked solids
as **electrolytes** for **nonaq.** secondary batteries)

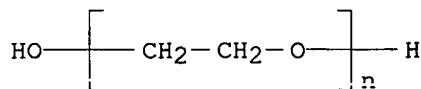
RN 444046-17-7 HCAPLUS

CN Pyridinium, 1,4-bis[2-[*triethoxysilyl*oxy]ethyl]-, salt with
1,1,1-trifluoro-N-[*(trifluoromethyl)sulfonyl*]methanesulfonamide (1:1),
polymer with α -hydro- ω -hydroxypoly(oxy-1,2-ethanediyl) (9CI)
(CA INDEX NAME)

CM 1

CRN 25322-68-3

CMF (C₂ H₄ O)_n H₂ O
 CCI PMS

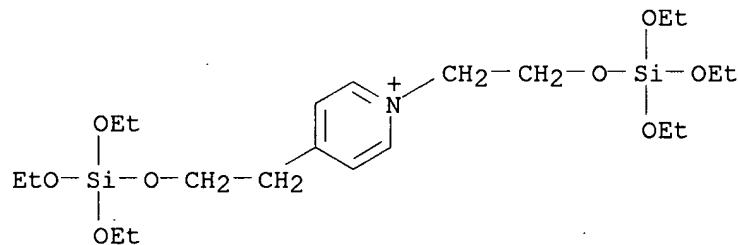


CM 2

CRN 444046-03-1
 CMF C₂₁ H₄₂ N O₈ Si₂ . C₂ F₆ N O₄ S₂

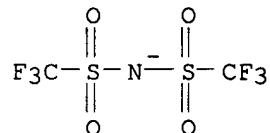
CM 3

CRN 444045-92-5
 CMF C₂₁ H₄₂ N O₈ Si₂



CM 4

CRN 98837-98-0
 CMF C₂ F₆ N O₄ S₂



IT 444046-03-1

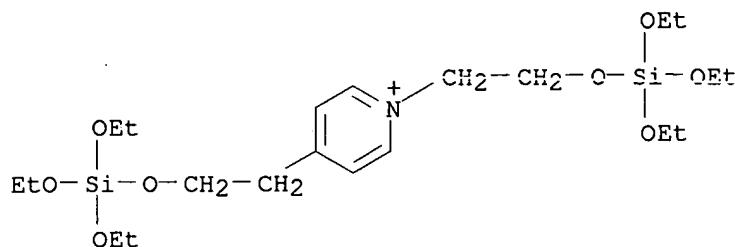
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (ammonium compound-Li salt mixts. or their crosslinked solids as **electrolytes** for nonaq. secondary batteries)

RN 444046-03-1 HCPLUS

CN Pyridinium, 1,4-bis[2-[triethoxysilyl]oxy]ethyl-, salt with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1) (9CI) (CA INDEX NAME)

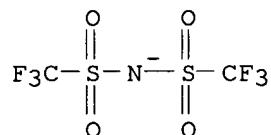
CM 1

CRN 444045-92-5
CMF C21 H42 N O8 Si2



CM 2

CRN 98837-98-0
CMF C2 F6 N O4 S2



IT 444045-93-6

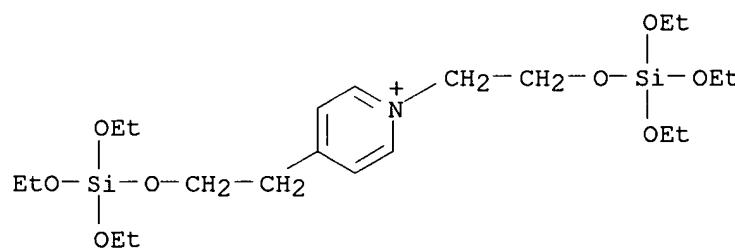
RL: TEM (Technical or engineered material use); USES (Uses)
(ammonium compound-Li salt mixts. or their crosslinked solids
as **electrolytes** for nonaq. secondary batteries)

RN 444045-93-6 HCAPLUS

CN Pyridinium, 1,4-bis[2-[(triethoxysilyl)oxy]ethyl]-, hexafluorophosphate(1-
) (9CI) (CA INDEX NAME)

CM 1

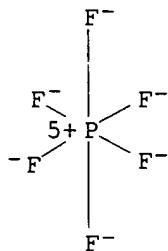
CRN 444045-92-5
CMF C21 H42 N O8 Si2



CM 2

CRN 16919-18-9

CMF F6 P
CCI CCS



L26 ANSWER 11 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2002:552264 HCAPLUS
 DN 137:127520
 TI Crosslinked ionomer-gelled **nonaqueous** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries
 IN Park, Chi-Kyun; Zhang, Zhiwei; Sun, Lu Ying; Chai, Chul
 PA SKC Co., Ltd., S. Korea
 SO Eur. Pat. Appl., 13 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 IC ICM H01M006-18
 ICS H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38

FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|------------|------|----------|-----------------|----------|
| PI | EP 1225649 | A2 | 20020724 | EP 2001-310592 | 20011219 |
| | EP 1225649 | A3 | 20020807 | | |

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 US 2002136958 A1 20020926 US 2001-760720 20010117
 US 2002136959 A1 20020926 US 2001-986459 20011108

PRAI US 2001-760720 A 20010117
 US 2001-986459 A 20011108

AB Ionomer-type gelled polymer electrolytes for rechargeable polymer-electrode batteries are formed by dissolving a gelling agent into organic-liquid electrolytes, pouring the gelling agent (with the organic liquid electrolyte) into the battery case, and gelling the mixture in-situ within the battery case at elevated temperature. The gel polymer electrolytes exhibit excellent ionic conductivity of up to 10⁻² S/cm and have a stable voltage suitable for **lithium** rechargeable batteries containing **lithium** salt-based organic-liquid electrolytes. The gelled polymer electrolyte is the reaction product of (1) an amine-group-containing compound (e.g., polymers copolymers, or amines), and (2) a halide-group or epoxy-group-containing compound (e.g., an alkylene halide, a halomethyl group, or an epoxy monomer). Preferred compds. for component (1) include pyridines and vinylpyridines, such as 2-vinylpyridine copolymers; preferred compds. for component (2) include bis(bromomethyl)benzenes, α,α' -dibromoxylenes, diiodialkanes, (3,4-

epoxycyclohexyl)methyl-3',4'-epoxycyclohexanecarboxylate, butadiene diepoxide, and butandediol diglycidyl ether.

ST gelled polymer electrolyte rechargeable **lithium** battery; pyridinium ionomer epoxy resin gelation electrolyte rechargeable battery; vinylpyridine ionomer epoxy resin gelation battery electrolyte; iodopropane vinylpyridine ionomer gelation battery electrolyte

IT Epoxy resins, uses
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(ionomers, battery electrolytes containing; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)

IT Gelation agents
(ionomers; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)

IT Battery electrolytes
(**nonaq.**; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)

IT Carbon black, uses
Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(polymer electrode containing; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)

IT Ionomers
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(pyridinium-epoxy and pyridinium-iodoxylylene copolymers, battery electrolytes containing; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)

IT 443890-84-4P 443890-85-5P 443890-86-6P
443890-87-7P
RL: DEV (Device component use); NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(gelling agent; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 7791-03-9, **Lithium** perchlorate 14283-07-9, **Lithium** tetrafluoroborate 18424-17-4, **Lithium** hexafluoroantimonate 21324-40-3, **Lithium** hexafluorophosphate 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** trifluoromethanesulfonate 90076-65-6, **Lithium** bis(trifluoromethanesulfonyl)imide
RL: DEV (Device component use); USES (Uses)
(**nonaq.** electrolyte containing; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)

IT 12190-79-3, Cobalt **lithium** oxide (CoLiO₂) 24937-79-9, Polyvinylidene difluoride
RL: DEV (Device component use); USES (Uses)
(polymer electrode containing; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)

IT 443890-84-4P 443890-85-5P 443890-86-6P

443890-87-7P

RL: DEV (Device component use); NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(gelling agent; crosslinked ionomer-gelled **nonaq.** polymer
electrolytes with high ionic conductivity for rechargeable
lithium polymer batteries)

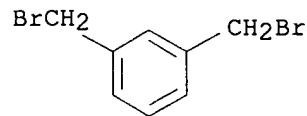
RN 443890-84-4 HCAPLUS

CN Pyridine, 2-ethenyl-, polymer with 1,3-bis(bromomethyl)benzene and
ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 626-15-3

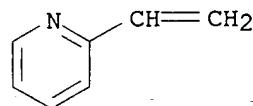
CMF C8 H8 Br2



CM 2

CRN 100-69-6

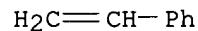
CMF C7 H7 N



CM 3

CRN 100-42-5

CMF C8 H8



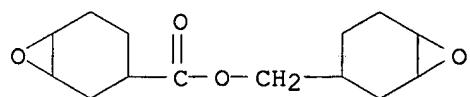
RN 443890-85-5 HCAPLUS

CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 7-oxabicyclo[4.1.0]hept-3-ylmethyl ester, polymer with 1,3-bis(bromomethyl)benzene, ethenylbenzene and 2-ethenylpyridine (9CI) (CA INDEX NAME)

CM 1

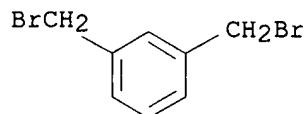
CRN 2386-87-0

CMF C14 H20 O4



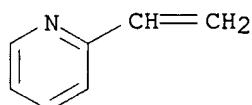
CM 2

CRN 626-15-3
CMF C8 H8 Br2



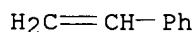
CM 3

CRN 100-69-6
CMF C7 H7 N



CM 4

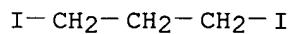
CRN 100-42-5
CMF C8 H8



RN 443890-86-6 HCPLUS
CN Pyridine, 2-ethenyl-, polymer with 1,3-diiodopropane and ethenylbenzene
(9CI) (CA INDEX NAME)

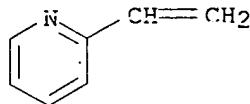
CM 1

CRN 627-31-6
CMF C3 H6 I2



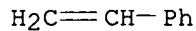
CM 2

CRN 100-69-6
CMF C7 H7 N



CM 3

CRN 100-42-5
CMF C8 H8

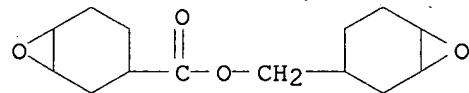


RN 443890-87-7 HCPLUS

CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 7-oxabicyclo[4.1.0]hept-3-ylmethyl ester, polymer with ethenylbenzene and 2-ethenylpyridine (9CI)
(CA INDEX NAME)

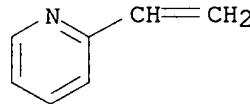
CM 1

CRN 2386-87-0
CMF C14 H20 O4



CM 2

CRN 100-69-6
CMF C7 H7 N



CM 3

CRN 100-42-5
CMF C8 H8

H₂C=CH-Ph

L26 ANSWER 12 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2002:354009 HCAPLUS
 DN 136:372231
 TI Electrolyte composition for **nonaqueous** secondary battery and solar photoelectrochemical cell
 IN Ono, Michio; Wariishi, Koji; Yasuda, Takayasu; Qian, Chang-yi
 PA Japan
 SO U.S. Pat. Appl. Publ., 41 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 IC ICM H01M010-40
 NCL 429324000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 74

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | US 2002055046 | A1 | 20020509 | US 2001-933716 | 20010822 |
| | US 6627099 | B2 | 20030930 | | |
| | JP 2002170426 | A2 | 20020614 | JP 2001-248879 | 20010820 |
| PRAI | JP 2000-250828 | A | 20000822 | | |
| | JP 2001-248879 | A | 20010820 | | |

AB An electrolyte composition which is excellent in durability and charge transport performance, and an electrochem. battery in which deterioration of the charge transport performance with time is minimized are disclosed. The electrolyte composition includes therein a salt which comprises an anion which contains a mesogen group, and an alkyl or alkenyl group having 6 carbons or more in the structure of the anion, and an organic or inorg. cation.

ST solar photoelectrochem **nonaq** electrolyte; battery secondary
nonaq electrolyte
 IT Battery electrolytes
 Electrolytes
 Mesophase pitch
 Photoelectrochemical cells
 (electrolyte composition for **nonaq**. secondary battery and solar photoelectrochem. cell)

IT Carbonaceous materials (technological products)
 RL: DEV (Device component use); USES (Uses)
 (electrolyte composition for **nonaq**. secondary battery and solar photoelectrochem. cell)

IT Secondary batteries
 (lithium; electrolyte composition for **nonaq**. secondary battery and solar photoelectrochem. cell)

IT 26570-48-9, Viscoat 335
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (crosslinking agent; electrolyte composition for **nonaq**. secondary battery and solar photoelectrochem. cell)

IT 9002-93-1, Triton x 100
 RL: TEM (Technical or engineered material use); USES (Uses)
 (dispersion agent; electrolyte composition for **nonaq**. secondary battery and solar photoelectrochem. cell)

IT 311-28-4, Tetrabutylammonium iodide 1656-48-0 7553-56-2, Iodine, uses

12190-79-3, Cobalt **lithium** oxide colio2 13463-67-7, Titania,
uses 174899-82-2 174899-83-3 307558-17-4 422555-55-3 422555-57-5
422555-59-7 422555-61-1 422555-63-3 422555-65-5 422555-67-7
422555-71-3 422555-73-5 **422555-74-6** 422555-76-8
422555-79-1 422555-80-4 422555-81-5 422555-82-6 422555-84-8
422555-85-9 422555-87-1 422555-88-2 422555-89-3 422555-91-7
422555-92-8 422555-93-9 423170-85-8 423171-91-9 423171-92-0
423171-95-3 423178-21-6
RL: DEV (Device component use); USES (Uses)
(electrolyte composition for **nonaq.** secondary battery
and solar photoelectrochem. cell)

IT 141460-19-7
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(electrolyte composition for **nonaq.** secondary battery and solar
photoelectrochem. cell)

IT 75-05-8, Acetonitrile, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(electrolyte composition for **nonaq.** secondary battery and solar
photoelectrochem. cell)

IT 2589-57-3, Dimethyl 2,2'-azodiisobutyrate
RL: RCT (Reactant); RACT (Reactant or reagent)
(heat polymerization initiator; electrolyte composition for **nonaq.**
secondary battery and solar photoelectrochem. cell)

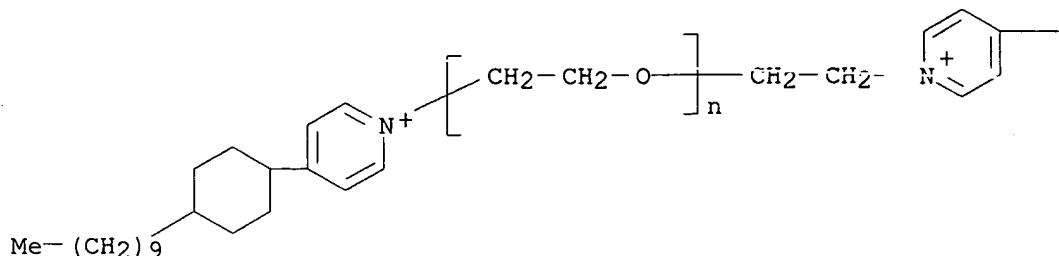
IT 71868-10-5, Irgacure 907
RL: RCT (Reactant); RACT (Reactant or reagent)
(light polymerization initiator; electrolyte composition for **nonaq.**
secondary battery and solar photoelectrochem. cell)

IT 100752-97-4, Diethylthioxanthone
RL: TEM (Technical or engineered material use); USES (Uses)
(sensitizer; electrolyte composition for **nonaq.** secondary battery
and solar photoelectrochem. cell)

IT **422555-74-6**
RL: DEV (Device component use); USES (Uses)
(electrolyte composition for **nonaq.** secondary battery
and solar photoelectrochem. cell)

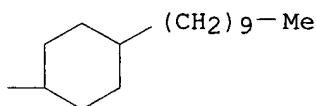
RN 422555-74-6 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α -[2-[4-(trans-4-decylcyclohexyl)pyridinio]ethyl]- ω -[2-[4-(trans-4-decylcyclohexyl)pyridinio]ethoxy]-, diiodide (9CI) (CA INDEX NAME)

PAGE 1-A



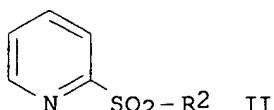
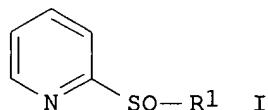
●2 I-

PAGE 1-B



L26 ANSWER 13 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2002:349417 HCAPLUS
 DN 136:357449
 TI Electrolyte solution containing sulfinylpyridine or sulfonylpyridine for secondary lithium battery
 IN Shimada, Koji; Tai, Shinichi; Hirakawa, Daisuke
 PA Sumitomo Seika Chemicals Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------|------|----------|-----------------|----------|
| PI | JP 2002134168 | A2 | 20020510 | JP 2000-327880 | 20001027 |
| PRAI | JP 2000-327880 | | 20001027 | | |
| OS | MARPAT 136:357449 | | | | |
| GI | | | | | |



AB The title solution contains a **nonaq.** solvent mixture containing a high-dielec.-constant solvent and a low-viscosity solvent, a **Li** salt, and 2-sulfinylpyridine derivs. I or 2-sulfonylpyridine derivs. II [R1 and R2 = Cl-4 (substituted) alkyl or (substituted) Ph]. A **Li** battery using the electrolyte solution has high initial charging-discharging efficiency.

ST sulfinylpyridine sulfonylpyridine electrolyte soln secondary lithium battery

IT Battery electrolytes
(electrolyte solution containing sulfinylpyridine or sulfonylpyridine for secondary lithium battery)

IT 17075-14-8, 2-Methylsulfonylpyridine 21948-75-4,
2-Methylsulfinylpyridine 24244-60-8, 2-Phenylsulfonylpyridine
66154-62-9 87905-04-2, 2-Ethylsulfinylpyridine
89818-46-2, 2-Phenylsulfinylpyridine
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(electrolyte solution containing sulfinylpyridine or sulfonylpyridine for secondary lithium battery)

IT 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(electrolyte; electrolyte solution containing sulfinylpyridine or sulfonylpyridine for secondary lithium battery)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6,
Dimethyl carbonate
RL: DEV (Device component use); USES (Uses)
(solvent; electrolyte solution containing sulfinylpyridine or sulfonylpyridine for secondary lithium battery)

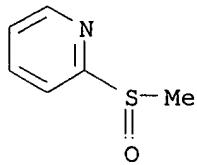
IT 17075-14-8, 2-Methylsulfonylpyridine 21948-75-4,
2-Methylsulfinylpyridine 24244-60-8, 2-Phenylsulfonylpyridine
66154-62-9 87905-04-2, 2-Ethylsulfinylpyridine
89818-46-2, 2-Phenylsulfinylpyridine
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(electrolyte solution containing sulfinylpyridine or sulfonylpyridine for secondary lithium battery)

RN 17075-14-8 HCPLUS

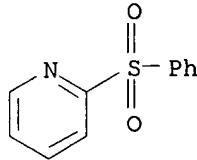
CN Pyridine, 2-(methylsulfonyl)- (8CI, 9CI) (CA INDEX NAME)



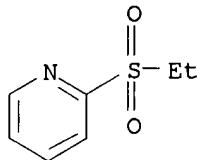
RN 21948-75-4 HCPLUS
CN Pyridine, 2-(methylsulfonyl)- (8CI, 9CI) (CA INDEX NAME)



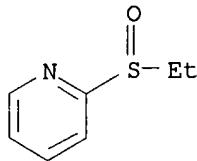
RN 24244-60-8 HCAPLUS
CN Pyridine, 2-(phenylsulfonyl)- (8CI, 9CI) (CA INDEX NAME)



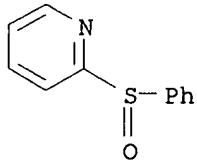
RN 66154-62-9 HCAPLUS
CN Pyridine, 2-(ethylsulfonyl)- (9CI) (CA INDEX NAME)



RN 87905-04-2 HCAPLUS
CN Pyridine, 2-(ethylsulfinyl)- (9CI) (CA INDEX NAME)



RN 89818-46-2 HCAPLUS
CN Pyridine, 2-(phenylsulfinyl)- (9CI) (CA INDEX NAME)



L26 ANSWER 14 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2002:47670 HCAPLUS

DN 136:88439

TI **Nonaqueous** electrolytic solution for secondary battery

IN Hiroaki, Itagaki; Chikara, Kiyohara

PA Mitsubishi Chemical Corporation, Japan

SO Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

Applicant

DT Patent

LA English

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | EP 1172878 | A2 | 20020116 | EP 2001-116675 | 20010716 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | JP 2002093462 | A2 | 20020329 | JP 2001-205661 | 20010706 |
| | US 2002025477 | A1 | 20020228 | US 2001-903750 | 20010713 |
| PRAI | JP 2000-213624 | A | 20000714 | | |

OS MARPAT 136:88439

AB A **nonaq.** electrolytic solution (containing at least an **organic solvent** and a **lithium** salt further containing a particular pyridine compound) is capable of depressing deterioration of battery properties in a high temperature environment. A secondary battery is also provided.

ST battery secondary **nonaq** electrolyte pyridine compd additive

IT Transition metal oxides

RL: DEV (Device component use); USES (Uses)
(lithiated; **nonaq.** electrolytic solution for secondary battery)IT Secondary batteries
(**lithium**; **nonaq.** electrolytic solution for secondary battery)

IT Battery electrolytes

(**nonaq.** electrolytic solution for secondary battery)

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)
(**nonaq.** electrolytic solution for secondary battery)

IT Carbon black, uses

RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq.** electrolytic solution for secondary battery)

IT Fluoropolymers, uses

RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq.** electrolytic solution for secondary battery)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3,

Lithium hexafluorophosphate 39457-42-6, Lithium

manganese oxide 52627-24-4, Cobalt lithium oxide 53027-29-5,

Iron Lithium manganese oxide 61179-01-9, Aluminum

Lithium manganese oxide 133782-19-1, Lithium manganese

vanadium oxide 145896-59-9, Aluminum lithium manganese oxide

Al0.1LiMn1.9O4 153327-00-5, Gallium Lithium manganese oxide

162684-16-4, Lithium manganese nickel oxide 187156-09-8,

Lithium manganese zinc oxide 191538-04-2, Copper Lithium

manganese oxide 204450-96-4, Chromium Lithium manganese oxide

208394-04-1, Lithium manganese titanium oxide 214536-41-1,

Cobalt Lithium manganese oxide

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic solution for secondary battery)

IT 91-02-1, 2-Benzoylpyridine 100-70-9, 2-Cyanopyridine
 114-91-0 372-48-5, 2-Fluoropyridine 487-19-4,
 3-(1-Methylpyrrol-2-yl)pyridine 539-32-2, 3-Butylpyridine
 580-35-8, 2,4,6-Triphenylpyridine 585-48-8,
 2,6-Ditert-Butylpyridine 622-39-9, 2-Propylpyridine
 644-98-4, 2-IsoPropylpyridine 696-30-0,
 4-IsoPropylpyridine 700-16-3, Pentafluoropyridine
 702-16-9, 2-Methyl-5-butylpyridine 1122-62-9,
 2-Acetylpyridine 1122-81-2, 4-Propylpyridine 1129-69-7
 , 2-Hexylpyridine 1628-89-3, 2-Methoxypyridine 1658-42-0
 , Methyl 2-Pyridylacetate 2057-49-0, 4-(3-Phenylpropyl)pyridine
 2294-76-0, 2-Pentylpyridine 2456-81-7,
 4-(1-Pyrrolidinyl)pyridine 2524-52-9, 2-Pyridine carboxylic
 acid, ethyl ester 2530-26-9, 3-Nitropyridine 2739-97-1
 , 2-(Cyanomethyl)pyridine 2767-90-0, 4-Piperidinopyridine
 2961-47-9, 4-(5-Nonyl)pyridine 2961-49-1
 3796-23-4, 3-Trifluoromethylpyridine 3978-81-2,
 4-tert-Butylpyridine 3980-49-2 4673-31-8,
 3-Propylpyridine 4783-68-0, 2-Phenoxyypyridine 4810-79-1
 , 4-IsoButylpyridine 4810-86-0 5051-98-9
 5335-75-1, 4-Butylpyridine 5402-34-6 5683-33-0
 , 2-Dimethylaminopyridine 5944-41-2, 2-tert-Butylpyridine
 6831-86-3, 2-tert-Butyl-6-methylpyridine 6972-69-6,
 N,N-Dimethylnicotinamide 7295-76-3, 3-Methoxypyridine
 7399-50-0, 2-(3-Pentyl)pyridine 9002-84-0, Ptfe
 17452-27-6, 3-Pyridylisothiocyanate 20336-15-6,
 2,4,6-Tritert-Butylpyridine 21298-55-5, 2-(3-Thienyl)pyridine
 24937-79-9, Pvdf 35182-51-5, 4-(3-Pentyl)pyridine
 38222-83-2, 2,6-Ditert-Butyl-4-methylpyridine 38222-90-1
 40055-37-6 40089-91-6, 4-Octylpyridine
 50966-74-0 64001-70-3, 4-(1,3,4)Oxadiazol-2-ylpyridine
 67580-61-4, 4-(2-Diethylaminoethyl)pyridine 70380-75-5,
 5-(Pyrid-4-yl)oxazole 80401-50-9, 2-Undecylpyridine
 80866-95-1, 3-(Pyrrol-1-ylmethyl)pyridine 82993-35-9
 83978-69-2 87451-35-2 97691-20-8
 102253-71-4, 4-(4-Pyridyl)-1,2,3-thiadiazole 387367-45-5
 387367-57-9 387367-60-4

RL: MOA (Modifier or additive use); USES (Uses)

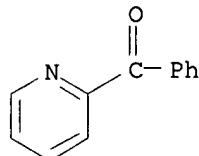
(nonaq. electrolytic solution for secondary battery)

IT 91-02-1, 2-Benzoylpyridine 100-70-9, 2-Cyanopyridine
 114-91-0 372-48-5, 2-Fluoropyridine 487-19-4,
 3-(1-Methylpyrrol-2-yl)pyridine 539-32-2, 3-Butylpyridine
 580-35-8, 2,4,6-Triphenylpyridine 585-48-8,
 2,6-Ditert-Butylpyridine 622-39-9, 2-Propylpyridine
 644-98-4, 2-IsoPropylpyridine 696-30-0,
 4-IsoPropylpyridine 700-16-3, Pentafluoropyridine
 702-16-9, 2-Methyl-5-butylpyridine 1122-62-9,
 2-Acetylpyridine 1122-81-2, 4-Propylpyridine 1129-69-7
 , 2-Hexylpyridine 1628-89-3, 2-Methoxypyridine 1658-42-0
 , Methyl 2-Pyridylacetate 2057-49-0, 4-(3-Phenylpropyl)pyridine
 2294-76-0, 2-Pentylpyridine 2456-81-7,
 4-(1-Pyrrolidinyl)pyridine 2524-52-9, 2-Pyridine carboxylic
 acid, ethyl ester 2530-26-9, 3-Nitropyridine 2739-97-1
 , 2-(Cyanomethyl)pyridine 2767-90-0, 4-Piperidinopyridine
 2961-47-9, 4-(5-Nonyl)pyridine 2961-49-1
 3796-23-4, 3-Trifluoromethylpyridine 3978-81-2,
 4-tert-Butylpyridine 3980-49-2 4673-31-8,

3-Propylpyridine 4783-68-0, 2-Phenoxyppyridine 4810-79-1
, 4-IsoButylpyridine 4810-86-0 5051-98-9
5335-75-1, 4-Butylpyridine 5402-34-6 5683-33-0
, 2-Dimethylaminopyridine 5944-41-2, 2-tert-Butylpyridine
6831-86-3, 2-tert-Butyl-6-methylpyridine 6972-69-6,
N,N-Dimethylnicotinamide 7295-76-3, 3-Methoxypyridine
7399-50-0, 2-(3-Pentyl)pyridine 17452-27-6,
3-Pyridylisothiocyanate 20336-15-6, 2,4,6-Triter-Butylpyridine
21298-55-5, 2-(3-Thienyl)pyridine 35182-51-5,
4-(3-Pentyl)pyridine 38222-83-2, 2,6-Ditert-Butyl-4-
methylpyridine 38222-90-1 40055-37-6
40089-91-6, 4-Octylpyridine 50966-74-0
64001-70-3, 4-(1,3,4)Oxadiazol-2-ylpyridine 67580-61-4,
4-(2-Diethylaminoethyl)pyridine 70380-75-5, 5-(Pyrid-4-
yl)oxazole 80401-50-9, 2-Undecylpyridine 80866-95-1,
3-(Pyrrol-1-ylmethyl)pyridine 82993-35-9 83978-69-2
87451-35-2 97691-20-8 102253-71-4,
4-(4-Pyridyl)-1,2,3-thiadiazole 387367-45-5 387367-57-9
RL: MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolytic solution for secondary battery)

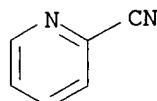
RN 91-02-1 HCPLUS

CN Methanone, phenyl-2-pyridinyl- (9CI) (CA INDEX NAME)



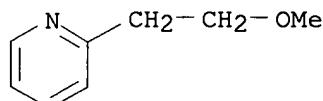
RN 100-70-9 HCPLUS

CN 2-Pyridinecarbonitrile (9CI) (CA INDEX NAME)



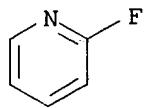
RN 114-91-0 HCPLUS

CN Pyridine, 2-(2-methoxyethyl)- (6CI, 8CI, 9CI) (CA INDEX NAME)

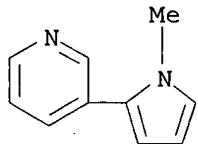


RN 372-48-5 HCPLUS

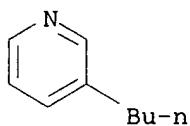
CN Pyridine, 2-fluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



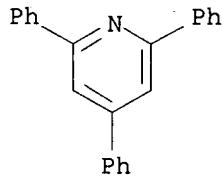
RN 487-19-4 HCAPLUS
CN Pyridine, 3-(1-methyl-1H-pyrrol-2-yl)- (9CI) (CA INDEX NAME)



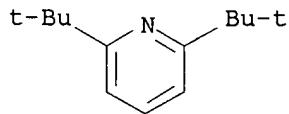
RN 539-32-2 HCAPLUS
CN Pyridine, 3-butyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



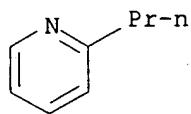
RN 580-35-8 HCAPLUS
CN Pyridine, 2,4,6-triphenyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



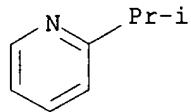
RN 585-48-8 HCAPLUS
CN Pyridine, 2,6-bis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



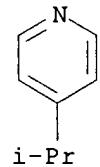
RN 622-39-9 HCAPLUS
CN Pyridine, 2-propyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



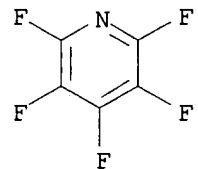
RN 644-98-4 HCAPLUS
CN Pyridine, 2-(1-methylethyl)- (9CI) (CA INDEX NAME)



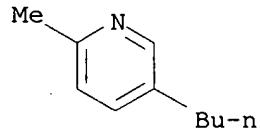
RN 696-30-0 HCAPLUS
CN Pyridine, 4-(1-methylethyl)- (9CI) (CA INDEX NAME)



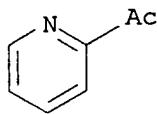
RN 700-16-3 HCAPLUS
CN Pyridine, pentafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



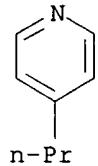
RN 702-16-9 HCAPLUS
CN Pyridine, 5-butyl-2-methyl- (9CI) (CA INDEX NAME)



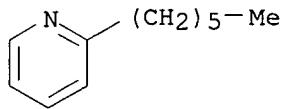
RN 1122-62-9 HCAPLUS
CN Ethanone, 1-(2-pyridinyl)- (9CI) (CA INDEX NAME)



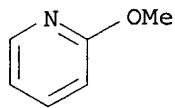
RN 1122-81-2 HCPLUS
CN Pyridine, 4-propyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



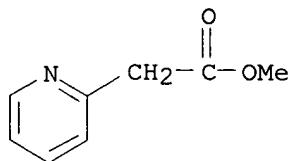
RN 1129-69-7 HCPLUS
CN Pyridine, 2-hexyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



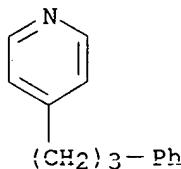
RN 1628-89-3 HCPLUS
CN Pyridine, 2-methoxy- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



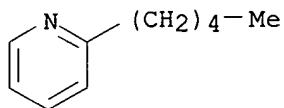
RN 1658-42-0 HCPLUS
CN 2-Pyridineacetic acid, methyl ester (8CI, 9CI) (CA INDEX NAME)



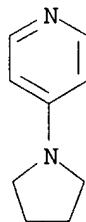
RN 2057-49-0 HCPLUS
CN Pyridine, 4-(3-phenylpropyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



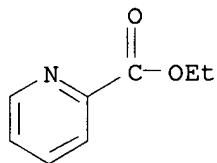
RN 2294-76-0 HCAPLUS
CN Pyridine, 2-pentyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



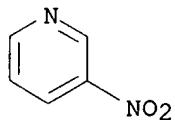
RN 2456-81-7 HCAPLUS
CN Pyridine, 4-(1-pyrrolidinyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



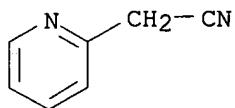
RN 2524-52-9 HCAPLUS
CN 2-Pyridinecarboxylic acid, ethyl ester (9CI) (CA INDEX NAME)



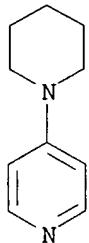
RN 2530-26-9 HCAPLUS
CN Pyridine, 3-nitro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



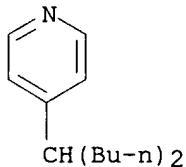
RN 2739-97-1 HCAPLUS
CN 2-Pyridineacetonitrile (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



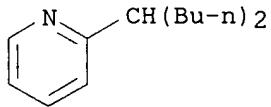
RN 2767-90-0 HCPLUS
CN Pyridine, 4-(1-piperidinyl)- (9CI) (CA INDEX NAME)



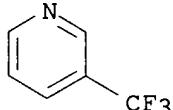
RN 2961-47-9 HCPLUS
CN Pyridine, 4-(1-butylpentyl)- (6CI, 8CI, 9CI) (CA INDEX NAME)



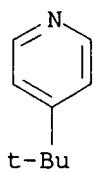
RN 2961-49-1 HCPLUS
CN Pyridine, 2-(1-butylpentyl)- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



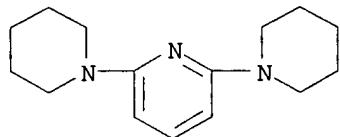
RN 3796-23-4 HCPLUS
CN Pyridine, 3-(trifluoromethyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



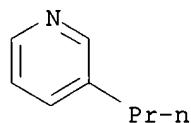
RN 3978-81-2 HCPLUS
CN Pyridine, 4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



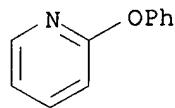
RN 3980-49-2 HCPLUS
CN Pyridine, 2,6-di-1-piperidinyl- (9CI) (CA INDEX NAME)



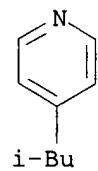
RN 4673-31-8 HCPLUS
CN Pyridine, 3-propyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



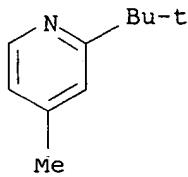
RN 4783-68-0 HCPLUS
CN Pyridine, 2-phenoxy- (7CI, 8CI, 9CI) (CA INDEX NAME)



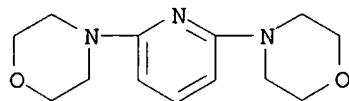
RN 4810-79-1 HCPLUS
CN Pyridine, 4-(2-methylpropyl)- (9CI) (CA INDEX NAME)



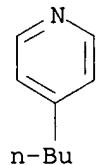
RN 4810-86-0 HCPLUS
CN Pyridine, 2-(1,1-dimethylethyl)-4-methyl- (9CI) (CA INDEX NAME)



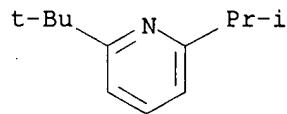
RN 5051-98-9 HCAPLUS
CN Morpholine, 4,4'-(2,6-pyridinediy)bis- (9CI) (CA INDEX NAME)



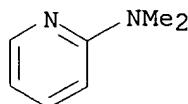
RN 5335-75-1 HCAPLUS
CN Pyridine, 4-butyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



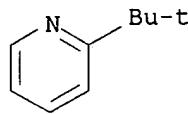
RN 5402-34-6 HCAPLUS
CN Pyridine, 2-(1,1-dimethylethyl)-6-(1-methylethyl)- (9CI) (CA INDEX NAME)



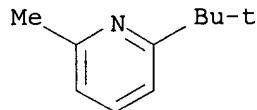
RN 5683-33-0 HCAPLUS
CN 2-Pyridinamine, N,N-dimethyl- (9CI) (CA INDEX NAME)



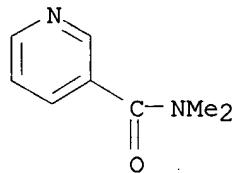
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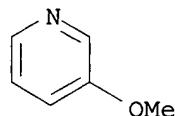
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CN Pyridine, 2-(1,1-dimethylethyl)-6-methyl- (9CI) (CA INDEX NAME)



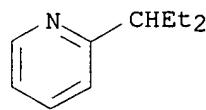
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CN 3-Pyridinecarboxamide, N,N-dimethyl- (9CI) (CA INDEX NAME)



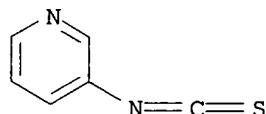
RN 7295-76-3 HCPLUS
CN Pyridine, 3-methoxy- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



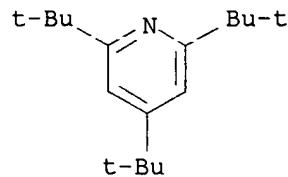
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CN Pyridine, 2-(1-ethylpropyl)- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



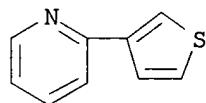
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CN Pyridine, 3-isothiocyanato- (9CI) (CA INDEX NAME)



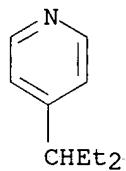
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CN Pyridine, 2,4,6-tris(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



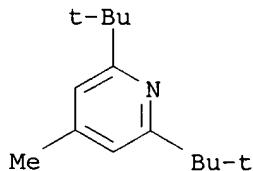
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CN Pyridine, 2-(3-thienyl)- (8CI, 9CI) (CA INDEX NAME)



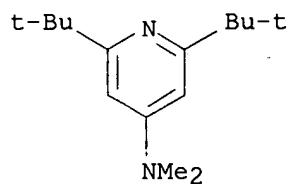
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CN Pyridine, 4-(1-ethylpropyl)- (6CI, 9CI) (CA INDEX NAME)



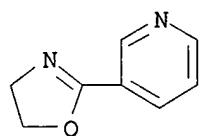
RN 38222-83-2 HCPLUS
CN Pyridine, 2,6-bis(1,1-dimethylethyl)-4-methyl- (9CI) (CA INDEX NAME)



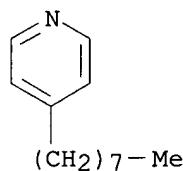
RN 38222-90-1 HCPLUS
CN 4-Pyridinamine, 2,6-bis(1,1-dimethylethyl)-N,N-dimethyl- (9CI) (CA INDEX NAME)



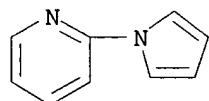
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CN Pyridine, 3-(4,5-dihydro-2-oxazolyl)- (9CI) (CA INDEX NAME)



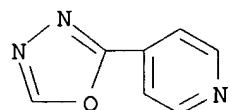
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CN Pyridine, 4-octyl- (9CI) (CA INDEX NAME)



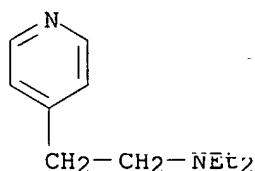
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CN Pyridine, 2-(1H-pyrrol-1-yl)- (9CI) (CA INDEX NAME)



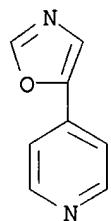
RN 64001-70-3 HCAPLUS
CN Pyridine, 4-(1,3,4-oxadiazol-2-yl)- (6CI, 9CI) (CA INDEX NAME)



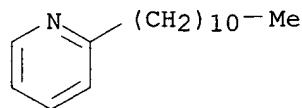
RN 67580-61-4 HCAPLUS
CN 4-Pyridineethanamine, N,N-diethyl- (9CI) (CA INDEX NAME)



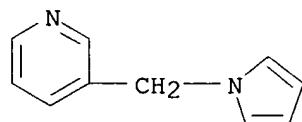
RN 70380-75-5 HCPLUS
CN Pyridine, 4-(5-oxazolyl)- (9CI) (CA INDEX NAME)



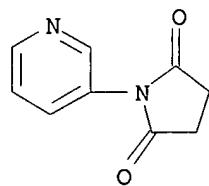
RN 80401-50-9 HCPLUS
CN Pyridine, 2-undecyl- (6CI, 9CI) (CA INDEX NAME)



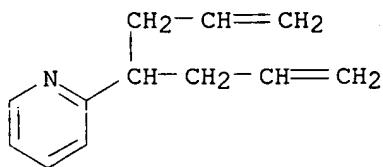
RN 80866-95-1 HCPLUS
CN Pyridine, 3-(1H-pyrrol-1-ylmethyl)- (9CI) (CA INDEX NAME)



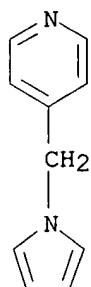
RN 82993-35-9 HCPLUS
CN 2,5-Pyrrolidinedione, 1-(3-pyridinyl)- (9CI) (CA INDEX NAME)



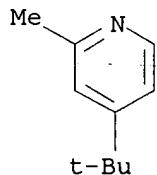
RN 83978-69-2 HCPLUS
CN Pyridine, 2-[1-(2-propenyl)-3-but-enyl]- (9CI) (CA INDEX NAME)



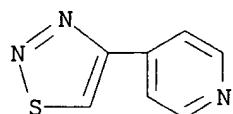
RN 87451-35-2 HCAPLUS
CN Pyridine, 4-(1H-pyrrol-1-ylmethyl)- (9CI) (CA INDEX NAME)



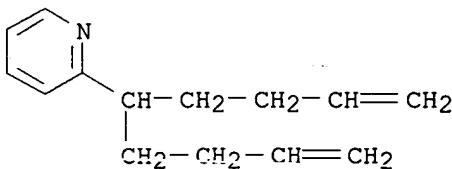
RN 97691-20-8 HCAPLUS
CN Pyridine, 4-(1,1-dimethylethyl)-2-methyl- (9CI) (CA INDEX NAME)



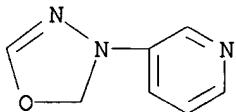
RN 102253-71-4 HCAPLUS
CN Pyridine, 4-(1,2,3-thiadiazol-4-yl)- (9CI) (CA INDEX NAME)



RN 387367-45-5 HCAPLUS
CN Pyridine, 2-[1-(3-butetyl)-4-pentenyl]- (9CI) (CA INDEX NAME)



RN 387367-57-9 HCAPLUS
 CN Pyridine, 3-(1,3,4-oxadiazol-2H-yl)- (9CI) (CA INDEX NAME)



L26 ANSWER 15 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2001:933910 HCAPLUS
 DN 136:72280
 TI Secondary **nonaqueous** electrolyte battery
 IN Higashimoto, Koji; Suzuki, Katsunori; Iguchi, Tomohiro; Hironaka, Kensuke
 PA Shin-Kobe Electric Machinery Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------------|------|----------|-----------------|----------|
| PI JP 2001357874 | A2 | 20011226 | JP 2000-176281 | 20000613 |
| PRAI JP 2000-176281 | | 20000613 | | |

AB The battery has a **Li** intercalating cathode, a **Li** intercalating anode, and a **nonaq.** electrolyte solution; where the electrolyte solution contains a leveling agent prevent concentrated deposition of metal ions on cathode and/or anode.
 ST secondary **lithium** battery electrolyte metal deposition leveling agent
 IT Azo dyes
 (electrolyte solns. containing additives preventing concentrated metal deposition on electrodes in secondary **lithium** batteries)

IT Aldehydes, uses
 Gelatins, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing additives preventing concentrated metal deposition on electrodes in secondary **lithium** batteries)
 IT Secondary batteries
 (**lithium**; electrolyte solns. containing additives preventing concentrated metal deposition on electrodes in secondary **lithium** batteries)

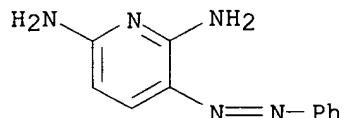
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 21324-40-3,
Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing additives preventing concentrated metal deposition
 on electrodes in secondary lithium batteries)

IT 81-07-2, Saccharine 91-63-4, Quinaldine 109-78-4, Ethylene cyanohydrin
 110-64-5, 2-Butene-1,4-diol 136-40-3D, **Pyridium, compds.**
 333-20-0, Potassium thiocyanate 1655-29-4, Sodium 1,5-naphthalenedisulfonate 7320-34-5, Potassium pyrophosphate 10533-44-5
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing additives preventing concentrated metal deposition on electrodes in secondary lithium batteries)

IT 136-40-3D, **Pyridium, compds.**
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing additives preventing concentrated metal deposition on electrodes in secondary lithium batteries)

RN 136-40-3 HCAPLUS

CN 2,6-Pyridinediamine, 3-(phenylazo)-, monohydrochloride (9CI) (CA INDEX NAME)



● HCl

L26 ANSWER 16 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2001:919231 HCAPLUS
 DN 136:56375
 TI Liquid crystal electrolyte and secondary battery
 IN Nakamura, Shinichi; Igawa, Satoshi
 PA Canon Inc., Japan
 SO Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01B001-06
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|----------|
| PI | JP 2001351683 | A2 | 20011221 | JP 2000-170253 | 20000607 |
| PRAI | JP 2000-170253 | | 20000607 | | |
| AB | The electrolyte contains a metal salt and a liquid crystal compound having H bond. The salt is preferably an alkali metal salt, the liquid crystal has the H bond formed between H and N, and the electrolyte may contain an organic solvent or a polyether. | | | | |
| ST | battery electrolyte hydrogen bond liq crystal compd | | | | |
| IT | Battery electrolytes (compns. of electrolytes containing alkaline metal salts and hydrogen bond liquid | | | | |

IT crystal compds. for secondary battery)
7791-03-9, Lithium perchlorate 33454-82-9, Lithium
trifluoromethanesulfonate 179418-04-3 **381726-17-6**
RL: DEV (Device component use); USES (Uses)
(compns. of **electrolytes** containing alkaline metal salts and hydrogen
bond liquid crystal compds. for secondary battery)

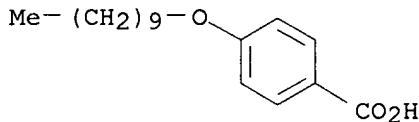
IT **381726-17-6**
RL: DEV (Device component use); USES (Uses)
(compns. of **electrolytes** containing alkaline metal salts and hydrogen
bond liquid crystal compds. for secondary battery)

RN 381726-17-6 HCPLUS

CN Benzoic acid, 4-(decyloxy)-, compd. with 4,4'-bipyridine (2:1) (9CI) (CA
INDEX NAME)

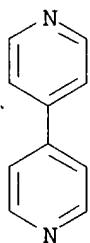
CM 1

CRN 5519-23-3
CMF C17 H26 O3



CM 2

CRN 553-26-4
CMF C10 H8 N2



L26 ANSWER 17 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
AN 2001:731243 HCPLUS
DN 135:291346
TI Secondary lithium batteries
IN Yang, Li; Yoshida, Toshihiro; Nemoto, Hiroshi; Takahashi, Michio
PA NGK Insulators, Ltd., Japan
SO PCT Int. Appl., 67 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------|--|------|----------|-----------------|----------|
| PI | WO 2001073884 | A1 | 20011004 | WO 2001-JP1135 | 20010216 |
| | W: CA, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR | | | | |
| | JP 2001273927 | A2 | 20011005 | JP 2000-89934 | 20000328 |
| | JP 2001283907 | A2 | 20011012 | JP 2000-89936 | 20000328 |
| | JP 2001283919 | A2 | 20011012 | JP 2000-89965 | 20000328 |
| | JP 2001283920 | A2 | 20011012 | JP 2000-89972 | 20000328 |
| | JP 2001283921 | A2 | 20011012 | JP 2000-89974 | 20000328 |
| | EP 1202374 | A1 | 20020502 | EP 2001-904518 | 20010216 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR | | | | |
| | US 2003190530 | A1 | 20031009 | US 2001-9216 | 20011108 |
| PRAI | JP 2000-89934 | A | 20000328 | | |
| | JP 2000-89936 | A | 20000328 | | |
| | JP 2000-89965 | A | 20000328 | | |
| | JP 2000-89972 | A | 20000328 | | |
| | JP 2000-89974 | A | 20000328 | | |
| | WO 2001-JP1135 | W | 20010216 | | |
| AB | The batteries have a coiled electrode/separator stack and a nonaqueous Li salt electrolyte solution, where the cathode, anode, separator, and/or the electrolyte solution contain organic and/or inorg. Cu corrosion inhibitor or Cu trapping agent, a compound containing both basic organic groups and inorg. acid groups, a N-O radical containing cyclic compound, a compound not containing Lewis acid atoms and Lewis base atoms at the same time, a 3-dimensional siloxane compound, and/or a nonionic surfactant, and/or a cyclic Mn ²⁺ source in the electrolytes; and the electrolyte soln contains a water trapping agent or a HF trapping agent. | | | | |
| ST | secondary lithium battery electrode electrolyte separator additive; copper corrosion inhibitor secondary lithium battery; trapping agents secondary lithium batteries; water trapping agents secondary lithium batteries; hydrofluoric acid trapping agents secondary lithium batteries | | | | |
| IT | Secondary batteries (lithium ; additives for electrodes and separators and electrolyte solns. in secondary lithium batteries) | | | | |
| IT | 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 126-73-8, Tributyl phosphate, uses 617-86-7, Triethylsilane 7440-44-0, Carbon, uses 12057-17-9, Lithium manganese oxide (LiMn ₂ O ₄) 21324-40-3, Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (additives for electrodes and separators and electrolyte solns. in secondary lithium batteries) | | | | |
| IT | 95-14-7, 1,2,3-Benzotriazole 128-94-9, 1,8-Diamino-4,5-dihydroxyanthraquinone 2564-83-2 9004-99-3 9014-92-0, Polyethylene glycol mono-dodecylphenyl ether 14325-24-7, Manganese (II) phthalocyanine 14691-88-4 16011-96-4, 2-Iminopiperidine hydrochloride 26027-38-3, Polyethylene glycol mono-4-nonylphenyl ether 26635-92-7 34272-83-8 207505-82-6 213453-16-8 364589-08-2 364589-09-3 | | | | |
| | RL: MOA (Modifier or additive use); USES (Uses) (additives for electrodes and separators and electrolyte solns. in secondary lithium batteries) | | | | |
| RE.CNT. | 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD | | | | |
| RE | | | | | |

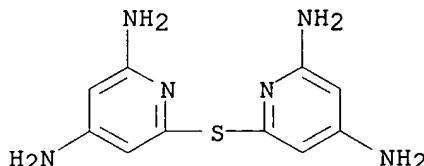
- (1) Denso Corporation; JP 09139233 A 1997 HCPLUS
- (2) Hitachi Ltd; WO 0013251 A HCPLUS
- (3) Hitachi Ltd; JP 200077103 A 2000
- (4) Japan Storage Battery Co Ltd; JP 1167233 A 1999
- (5) Mitsui Chemicals Ltd; JP 200012080 2000
- (6) Samsung Display Devices Co Ltd; GB 2328786 A HCPLUS
- (7) Samsung Display Devices Co Ltd; JP 11126633 A 1999
- (8) Sanyo Electric Co Ltd; JP 660877 A 1994
- (9) Sanyo Electric Co Ltd; JP 2000268861 A 2000 HCPLUS
- (10) Sony Corporation; JP 200058123 A 2000
- (11) The Furukawa Electric Co Ltd; JP 11273683 A 1999 HCPLUS
- (12) Toyota Central Research And Development Laboratories Inc; JP 1116602 A 1999

IT 364589-08-2 364589-09-3

RL: MOA (Modifier or additive use); USES (Uses)
(additives for electrodes and separators and **electrolyte**
solns. in secondary **lithium** batteries)

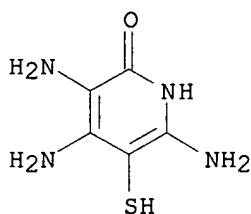
RN 364589-08-2 HCPLUS

CN 2,4-Pyridinediamine, 6,6'-thiobis- (9CI) (CA INDEX NAME)



RN 364589-09-3 HCPLUS

CN 2(1H)-Pyridinone, 3,4,6-triamino-5-mercaptop- (9CI) (CA INDEX NAME)



L26 ANSWER 18 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN

AN 2001:676478 HCPLUS

DN 135:229377

TI Gel electrolyte precursors and batteries

IN Hayase, Shuji; Mikoshiba, Satoru; Miyamoto, Hirohisa; Takami, Norio

PA Toshiba Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

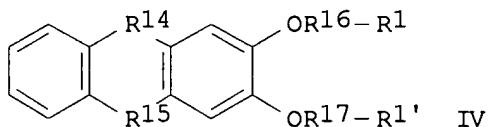
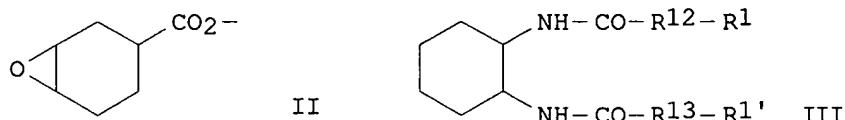
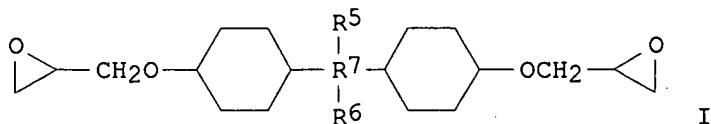
IC ICM H01M010-40

ICS H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------------|------|----------|-----------------|-----------------|
| PI JP 2001250584 | A2 | 20010914 | JP 2000-393534 | 20001225 |
| US 2001023041 | A1 | 20010920 | US 2000-748007 | <u>20001227</u> |
| PRAI JP 1999-374997 | A | 19991228 | | |
| GI | | | | |



AB The batteries have a cathode, an anode, and a gel electrolyte, containing an electrolyte solution and a crosslinked product of an alicyclic epoxy resin or an epoxy compound, having alicyclic structure and ≥ 1 epoxy group/mol. The crosslinked product contains $-(CR_1R_2CR_3R_4)n-$ units (R_1, R_2 = alkyl or aralkyl groups; R_3, R_4 = H or alkyl groups; n = natural number), the epoxy compound is I (R_5, R_6 = H or alkyl groups, R_7 = C, O, SO₂, or CO), the epoxy resin contain units II, and the electrolyte solution contains a **nonaq**. solvent and a Li salt selected from LiBF₄ and LiPF₆. The gel electrolyte precursors contain the electrolyte solution and gelling agent containing the epoxy compound and/or the alicyclic epoxy resin. Another type of the electrolyte is an onium salt polymer comprising a halogen containing compound and a N, P, or S compound selected from R₁R₂CONHCHR₃CONHR₄ (R_1 = halogen, halogenated organic group, or N, P, or S containing group; R_2 = bivalent organic group; R_3 and R_4 = monovalent organic group), R₁R₅CONHCHR₆CONURNCOR₈NHCOR₉R_{1'} (R_1' has same definition as R_1 ; R_6, R_8 = monovalent organic groups; R_7, R_9 = divalent organic groups), R₁₀NHCOCH(OH)CH(OH)CH(OH)CH₂OR₁₁R₁ (R_{10} = monovalent organic group, R_{11} = bivalent organic group), III (R_{12}, R_{13} = bivalent organic groups), IV (R_{14}, R_{15} = -CO- or -CH₂-; R_{16}, R_{17} = bivalent organic groups), R₁R₁₈NHCONHR₁₉R_{1'} (R_{18}, R_{19} = bivalent organic groups), or R₁R₂₀NHCONHR₂₁NHCOCHR₂₂R_{1'} [R_{20}, R_{22} = bivalent organic groups, R_{21} = monovalent organic group (sic)].

ST battery crosslinked alicyclic epoxy resin gel electrolyte

IT Epoxy resins, uses

RL: DEV (Device component use); USES (Uses)
(alicyclic, crosslinked; compns. of gel electrolyte precursors and secondary lithium batteries with gel electrolytes)

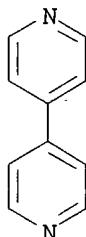
IT Battery electrolytes
 (compns. of gel electrolyte precursors and secondary lithium batteries with gel electrolytes)

IT 18393-55-0D, Triphenylsulfonium, salts 57835-99-1, Triphenylsulfonium hexafluorophosphate 192391-58-5, Sanaid SI 60
 RL: CAT (Catalyst use); DEV (Device component use); USES (Uses)
 (compns. of gel electrolyte precursors and secondary lithium batteries with gel electrolytes)

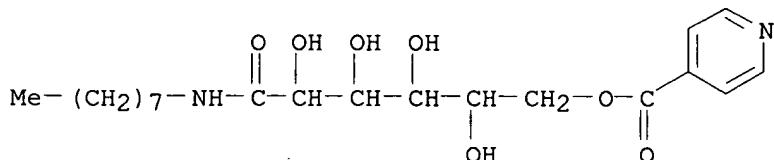
IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 553-26-4, 4,4'-Bipyridine 2386-87-0 13410-58-7 14283-07-9, Lithium fluoroborate 15390-22-4 24806-62-0 25085-98-7D, celloxide 2021, crosslinked 59333-65-2 82428-30-6 83343-61-7, Dibromohexane 109695-55-8 131826-14-7 151465-23-5D, celloxide 2081, crosslinked 269403-56-7 330628-15-4 330628-16-5 330628-19-8 359399-29-4 359399-30-7 359399-32-9 359399-33-0 359399-34-1 359399-35-2 359399-36-3 359399-37-4 359399-40-9 359399-41-0
 RL: DEV (Device component use); USES (Uses)
 (compns. of gel electrolyte precursors and secondary lithium batteries with gel electrolytes)

IT 553-26-4, 4,4'-Bipyridine 330628-15-4 330628-16-5 330628-19-8 359399-29-4
 RL: DEV (Device component use); USES (Uses)
 (compns. of gel electrolyte precursors and secondary lithium batteries with gel electrolytes)

RN 553-26-4 HCPLUS
 CN 4,4'-Bipyridine (8CI, 9CI) (CA INDEX NAME)

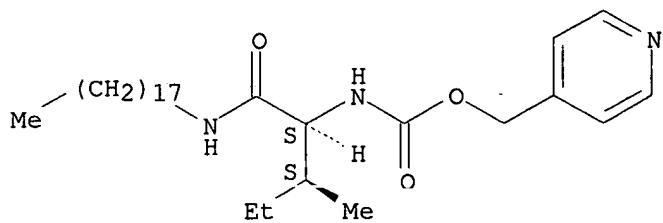


RN 330628-15-4 HCPLUS
 CN Hexonamide, N-octyl-, 6-(4-pyridinecarboxylate) (9CI) (CA INDEX NAME)

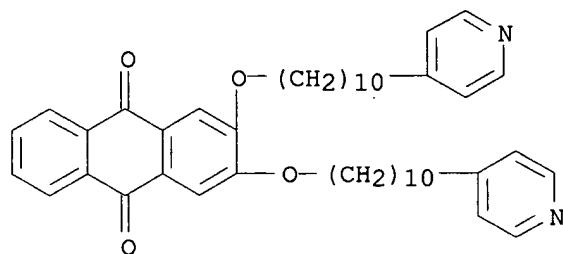


RN 330628-16-5 HCPLUS
 CN Carbamic acid, [(1S,2S)-2-methyl-1-[(octadecylamino)carbonyl]butyl]-, 4-pyridinylmethyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.

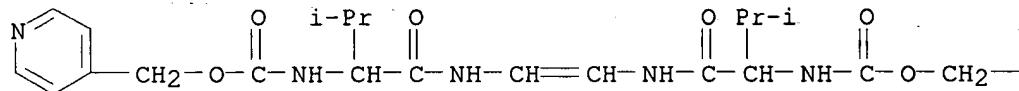


RN 330628-19-8 HCAPLUS
CN 9,10-Anthracenedione, 2,3-bis[[10-(4-pyridinyl)decyl]oxy]- (9CI) (CA INDEX NAME)



RN 359399-29-4 HCAPLUS
CN 2,5,8,11-Tetraazadodec-6-enedioic acid, 3,10-bis(1-methylethyl)-4,9-dioxo-, bis(4-pyridinylmethyl) ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

L26 ANSWER 19 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 2001:531955 HCAPLUS
DN 135:124958
TI Polymerizing molten salt monomer, electrolyte composition, and electrochemical cell
IN Ono, Michio; Sen, Masakazu
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 32 pp.
CODEN: JKXXAF
DT Patent
LA Japanese

IC ICM C07D213-30
 ICS C07D233-60; C07D233-64; C08F299-00; C08K003-16; C08L055-00;
 H01B001-06; H01B001-12; H01L031-04; H01M010-40; H01M014-00
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 35, 38, 76

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------|------|----------|-----------------|-----------------|
| PI | JP 2001199961 | A2 | 20010724 | JP 2000-13048 | 20000121 |
| | US 2001026890 | A1 | 20011004 | US 2001-765368 | <u>20010122</u> |
| PRAI | JP 2000-13048 | A | 20000121 | | |
| OS | MARPAT 135:124958 | | | | |

AB The title monomer is represented as Q[Y1(CH₂CH₂O)_nY2]_mX [Q = N-containing aromatic heterocyclic group for forming a cation; Y1 = divalent bond; Y2 = (substituted) alkyl; n = 2-20 integer; m = ≥2 integer; X = anion; ≥1 of Y2 contains a polymerizing group; Q or Y2 may be linked to give a dimer or a tetramer]. The title electrolyte composition contains a polymer obtained by polymerizing the monomer. An electrochem. cell containing the electrolyte composition is also claimed. Preferably, the cell contains a charge-transfer layer containing the electrolyte composition and a photosensitive

layer containing a dye-sensitized semiconductor. The electrolyte composition has

high charge-transfer property, photoelec. conversion efficiency, durability, and ion conductivity and is especially suitable for a secondary nonaq. battery and a solar cell.

ST polymg pyridinium molten salt monomer electrolyte compn electrochem cell; imidazolium polymg molten salt monomer electrolyte compn photoelectrochem cell; nonaq battery pyridinium polymer electrolyte compn; solar cell pyridinium polymer electrolyte compn

IT Onium compounds

RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (imidazolium compds., polymers; polymerizing molten salt monomer for polymer electrolyte composition in electrochem. cell)

IT Secondary batteries

(lithium; polymerizing molten salt monomer for polymer electrolyte composition in electrochem. cell)

IT Ionic conductors

(polymeric; polymerizing molten salt monomer for polymer electrolyte composition in electrochem. cell)

IT Pyridinium compounds

RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (polymers; polymerizing molten salt monomer for polymer electrolyte composition in electrochem. cell)

IT Battery electrolytes

Photoelectrochemical cells

Polymer electrolytes

Solar cells

(polymerizing molten salt monomer for polymer electrolyte composition in electrochem. cell)

IT 351182-07-5P 351182-10-0P 351182-13-3P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT

(Reactant or reagent)
(preparation and polymerization of; in preparation of polymerizing molten salt monomer for
salt monomer for
polymer electrolyte composition)

IT 42749-28-0P 77544-60-6P 136399-06-9P 136399-07-0P 188915-78-8P
188915-80-2P 351181-98-1P 351181-99-2P 351182-00-8P 351182-01-9P
351182-02-0P 351182-03-1P 351182-04-2P 351182-05-3P 351182-06-4P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(preparation and reaction of; in preparation of polymerizing molten salt monomer for
monomer for
polymer electrolyte composition)

IT 351182-09-7P 351182-12-2P 351182-15-5P
RL: IMF (Industrial manufacture); PREP (Preparation)
(preparation of; in preparation of polymerizing molten salt monomer for
polymer
electrolyte composition)

IT 351182-16-6P 351182-17-7P 351182-19-9P 351182-21-3P 351182-22-4P
351182-24-6P **351182-26-8P 351182-29-1P**
RL: DEV (Device component use); IMF (Industrial manufacture); PRP
(Properties); TEM (Technical or engineered material use); PREP
(Preparation); USES (Uses)
(preparation of; polymerizing molten salt monomer for polymer **electrolyte**
composition in electrochem. cell)

IT 98-59-9, p-Toluenesulfonyl chloride 112-60-7, Tetraethylene glycol
288-32-4, Imidazole, reactions 814-68-6, 2-Propenoyl chloride
2615-15-8, Hexaethylene glycol 3304-70-9 4296-15-5, 2-Methoxy ethyl
iodide 14104-20-2, Silver tetrafluoroborate 52808-36-3 52995-76-3
90076-65-6, **Lithium bis(trifluoromethylsulfonyl)amide**
113694-55-6 143127-81-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of; in preparation of polymerizing molten salt monomer for polymer
electrolyte composition)

IT **351182-26-8P 351182-29-1P**
RL: DEV (Device component use); IMF (Industrial manufacture); PRP
(Properties); TEM (Technical or engineered material use); PREP
(Preparation); USES (Uses)
(preparation of; polymerizing molten salt monomer for polymer **electrolyte**
composition in electrochem. cell)

RN 351182-26-8 HCPLUS

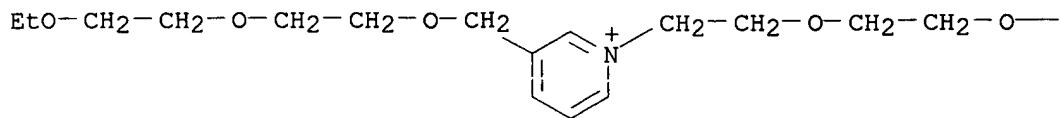
CN Pyridinium, 3-[[2-(2-ethoxyethoxy)ethoxy]methyl]-1-(19-oxo-3,6,9,12,15,18-hexaoxaheneicos-20-en-1-yl)-, iodide, polymer with α -(1-oxo-2-propenyl)- ω -[(1-oxo-2-propenyl)oxy]poly(oxy-1,2-ethanediyl) (9CI)
(CA INDEX NAME)

CM 1

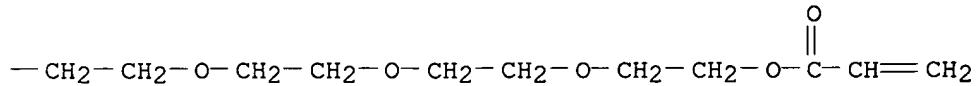
CRN 351182-25-7

CMF C27 H46 N O10 . I

PAGE 1-A

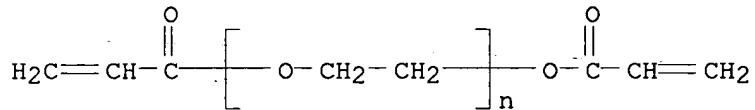
● I⁻

PAGE 1-B



CM 2

CRN 26570-48-9
 CMF (C₂ H₄ O)_n C₆ H₆ O₃
 CCI PMS

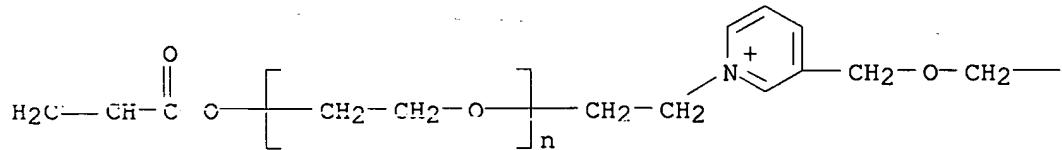


RN 351182-29-1 HCAPLUS
 CN Poly(oxy-1,2-ethanediyl), α,α' -[1,2-ethanediylbis(oxy-2,1-ethanediylloxymethylene)pyridinium-3,1-diyl-2,1-ethanediyl]bis[ω -[(1-oxo-2-propenyl)oxy]-, diiodide, polymer with α -(1-oxo-2-propenyl)- ω -[2-[3,5-bis[[2-(2-ethoxyethoxy)ethoxy]methyl]pyridinio]ethyl]poly(oxy-1,2-ethanediyl) iodide (9CI) (CA INDEX NAME)

CM 1

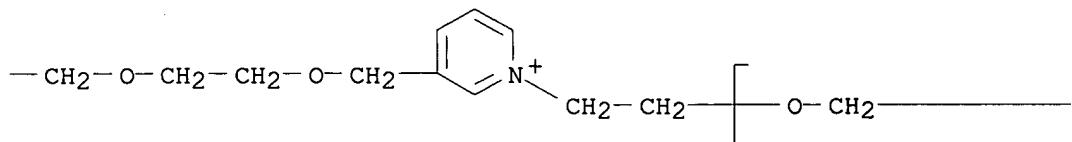
CRN 351182-28-0
 CMF (C₂ H₄ O)_n (C₂ H₄ O)_n C₂₆ H₃₄ N₂ O₇ . 2 I
 CCI PMS

PAGE 1-A

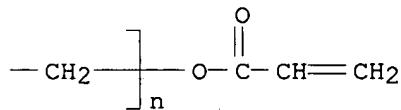


●2 I⁻

PAGE 1-B



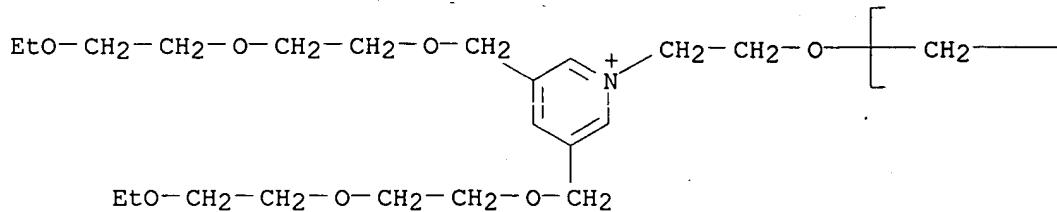
PAGE 1-C



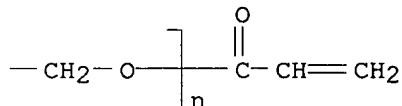
CM 2

CRN 351182-27-9
CMF (C₂H₄O)_n C₂₄H₄₀N O₈ . I
CCI PMS

PAGE 1-A

● I⁻

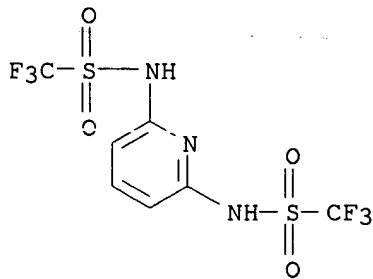
PAGE 1-B



- L26 ANSWER 20 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2001:179534 HCAPLUS
 DN 134:342446
 TI New and novel **lithium** imide electrolytes and copolymers:
 Synthesis and characterization for **lithium** rechargeable
 batteries
 AU Venkatasetty, H. V.
 CS H.V. Setty Enterprises, Inc., Burnsville, MN, USA
 SO Annual Battery Conference on Applications and Advances, 16th, Long Beach,
 CA, United States, Jan. 9-12, 2001 (2001), 277-282. Editor(s): Das, Radhe
 S. L.; Frank, Harvey. Publisher: Institute of Electrical and Electronics
 Engineers, New York, N. Y.
 CODEN: 69BADB
 DT Conference
 LA English
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 AB Several new and novel **Lithium** imide salts were synthesized and
 characterized for their conductivities and electrochem. stabilities in
 nonaq. solvent mixts. Many copolymers and diblock copolymers
 using monomers such as polyethylene glycol methacrylate of different mol.
 wts. and/or poly(lauryl methacrylate) were synthesized and characterized.
 Solid polymer electrolytes with promising Li salts and
 copolymers were prepared with different Li/O ratios and varying
 ratios of copolymers and polyethylene oxide with inert additives. Their
 conductivities and electrochem. stabilities were measured. All
Lithium imide salts and copolymer-based solid polymer electrolyte
 films are found to be stable from 0 to 4.5 V vs. Li. The
 solubilities and the conductivities of Li imide salts are found
 to depend on their structure. The phys. properties of copolymers are
 known to depend on the type and the mol. weight of the monomer used and the
 polymerization process. The solid polymer electrolyte films containing a large

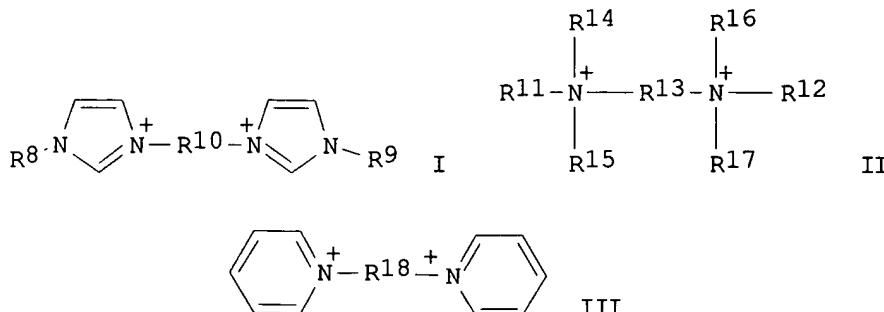
fraction of the copolymers in the mixture with polyethylene oxide and Li salts show much improved conductivity at room temperature. Both the solid polymer electrolyte films and the Li imide salt solns. have been used in Li cells to evaluate their performance. The performance data of cells with these electrolytes are discussed in terms of their structures and compns.

- ST lithium battery lithium imide electrolyte copolymer
 IT Secondary batteries
 (lithium; synthesis and characterization of lithium imide electrolytes and copolymers for lithium rechargeable batteries)
 IT Polyoxalkylenes, uses
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (polymers, complexes with lithium trifluoromethylsulfonyl perfluorobutylsulfonamide; synthesis and characterization of lithium imide electrolytes and copolymers for lithium rechargeable batteries)
 IT Battery electrolytes
 Electric conductivity
 (synthesis and characterization of lithium imide electrolytes and copolymers for lithium rechargeable batteries)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6,
 Dimethyl carbonate
 RL: DEV (Device component use); USES (Uses)
 (synthesis and characterization of lithium imide electrolytes and copolymers for lithium rechargeable batteries)
 IT 25322-68-3DP, Polyethylene glycol, polymers, complexes with lithium trifluoromethylsulfonyl perfluorobutylsulfonamide
 176719-70-3P 338746-27-3P 338746-28-4P 338746-29-5P
 338746-30-8P
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (synthesis and characterization of lithium imide electrolytes and copolymers for lithium rechargeable batteries)
 IT 13463-67-7, Titania, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (synthesis and characterization of lithium imide electrolytes and copolymers for lithium rechargeable batteries)
 RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
 (1) Anon; Polymer Electrolytes Review 1987, P275
 (2) Armand, M; Solid State Ionics 1994, V69, P309 HCPLUS
 (3) Capuno, F; J of Electrochem Soc 1991, V138, P1918
 (4) Dias, F; J of Power Source 2000, V88, P169 HCPLUS
 (5) Venkatassetty, H; J of Power Sources (submitted)
 (6) Venkatassetty, H; Proc of 15th Annual Battery Conference on Applications and Advances 2000
 IT 338746-27-3P
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (synthesis and characterization of lithium imide electrolytes and copolymers for lithium rechargeable batteries)
 RN 338746-27-3 HCPLUS
 CN Methanesulfonamide, N,N'-2,6-pyridinediylbis[1,1,1-trifluoro- (9CI) (CA INDEX NAME)



L26 ANSWER 21 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
 AN 2000:723536 HCPLUS
 DN 133:298800
 TI Carbonaceous materials and their manufacture, vanadium oxide derivatives, solid ion conductive electrochemical elements, and secondary nonaqueous electrolyte batteries
 IN Watanabe, Kazuhiro; Nichogi, Katsuhiro; Nanai, Satonari; Miyamoto, Akihito
 PA Matsushita Electric Industrial Co., Ltd., Japan
 SO Jpn. Kokai Tokyo Koho, 16 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M004-58
 ICS C01B031-02; H01M004-02; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 3

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------|------|----------|-----------------|----------|
| PI | JP 2000285921 | A2 | 20001013 | JP 1999-155011 | 19990602 |
| PRAI | JP 1998-163134 | A | 19980611 | | |
| | JP 1999-16754 | A | 19990126 | | |
| OS | MARPAT 133:298800 | | | | |
| GI | | | | | |



AB The carbonaceous materials are heat treated hardened resin, and are prepared by mixing the resin with an aromatic compds. having 2-10 rings and hardening the mixture. The solid ion electrochem. elements contain cations selected from imidazole radical ion or its derivative, having aliphatic C connected to the

N atoms, quaternary ammonium ion, I (R8 and R9 = substituents having aliphatic C connected directly to N; R10 = aliphatic C containing group), II (R14-R17 = substituents having aliphatic C connected directly to N; R11-R13 = C containing groups which may also contain aromatic groups), III (R18 = substituent containing aliphatic C), and IV (R21 and R22 = substituents having aliphatic C connected directly to N) mixed with other cations, e.g., metal ions selected from alkali metals, alkaline earth, Ag, Cu, and Zn. The batteries use the carbonaceous material for Li intercalating anodes, the conductive material as solid electrolyte, and V oxide derivs., AxV4-zMzO11 or AxByV4-zMzO11 (A and B and M are metals, x ≤, y ≤4, and z ≤4) for cathodes.

ST secondary lithium battery compn component; carbonaceous material anode secondary lithium battery; quaternary ammonium compd electrolyte secondary lithium battery; vanadium oxide cathode secondary lithium battery

IT Battery electrolytes
(electrolyte solns. containing quaternary ammonium salts and other salts for secondary lithium batteries)

IT Secondary batteries
(lithium; electrode and electrolyte components for secondary lithium batteries)

IT Battery anodes
(manufacture of carbonaceous materials from phenolic resin mixed with condensed ring compds. for anode in secondary lithium batteries)

IT Carbonaceous materials (technological products)
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(manufacture of carbonaceous materials from phenolic resin mixed with condensed ring compds. for anode in secondary lithium batteries)

IT Phenolic resins, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(manufacture of carbonaceous materials from phenolic resin mixed with condensed ring compds. for anode in secondary lithium batteries)

IT Battery cathodes
(substituted copper vanadium oxide cathodes for secondary solid electrolyte lithium batteries with carbonaceous anodes)

IT 96-49-1, Ethylene carbonate 106-93-4D, 1,2-Dibromoethane, reaction products with 1-methylimidazole 108-32-7, Propylene carbonate 110-86-1D, Pyridine, reaction products with 1,2-dibromoethane, uses 121-44-8D, Triethylamine, reaction products with 1,2-diiodoethane 121-44-8D, Triethylamine, reaction products with triethylamine 429-07-2, Tetraethylammonium hexafluorophosphate 616-47-7D, 1-Methylimidazole, reaction products with dibromo hydrocarbons 629-03-8D, 1,6-Dibromohexane, reaction products with 1-methylimidazole 13814-93-2, Calcium fluoroborate 13826-88-5, Zinc fluoroborate 16941-11-0, Ammonium hexafluorophosphate 21324-40-3, Lithium hexafluorophosphate 26042-63-7, Silver hexafluorophosphate 37275-48-2D, Bipyridine, N,N'-dialkyl derivs. 61175-74-4, Triethylphenylammonium bromide 155371-19-0, 1-Ethyl-3-methylimidazolium hexafluorophosphate 301358-91-8
RL: DEV (Device component use); USES (Uses)
(electrolyte solns. containing quaternary ammonium salts and other salts for secondary lithium batteries)

IT 90-15-3, 1-Naphthalenol 91-20-3, Naphthalene, processes 190-26-1, Ovalene 191-07-1, Coronene 191-35-5, 3H-Benzo[cd]pyrene 3074-00-8,

6H-Benzo[cd]pyren-6-one 117955-70-1, Coronenol 130643-27-5,
2H-Naphth[2,1,8,7-hijk]ovalene 301358-89-4, 2-Ovalenol
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(manufacture of carbonaceous materials from phenolic resin mixed with
condensed ring compds. for anode in secondary lithium
batteries)

IT 301358-93-0, Copper vanadium oxide (Cu_{2.13}V₄O₁₁) 301358-95-2, Copper
lithium vanadium oxide (CuLi_{1.8}V₄O₁₁) 301358-97-4,
Lithium vanadium oxide (Li_{1.8}V₄O₁₁) 301358-99-6, Copper
molybdenum vanadium oxide (Cu₂Mo_{0.2}V_{3.8}O₁₁) 301359-02-4, Copper
lithium molybdenum vanadium oxide (Cu₂Li_{0.5}Mo_{0.2}V_{3.8}O₁₁)
RL: DEV (Device component use); USES (Uses)
(substituted copper vanadium oxide cathodes for secondary solid
electrolyte lithium batteries with carbonaceous anodes)

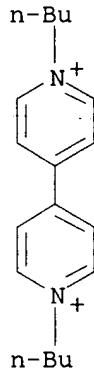
IT 301358-91-8
RL: DEV (Device component use); USES (Uses)
(electrolyte solns. containing quaternary ammonium salts and
other salts for secondary lithium batteries)

RN 301358-91-8 HCPLUS

CN 4,4'-Bipyridinium, 1,1'-dibutyl-, bis[hexafluorophosphate(1-)] (9CI) (CA
INDEX NAME)

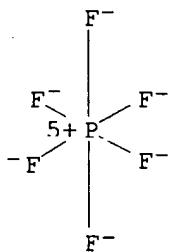
CM 1

CRN 47082-19-9
CMF C18 H26 N2



CM 2

CRN 16919-18-9
CMF F6 P
CCI CCS



L26 ANSWER 22 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2000:474501 HCAPLUS
 DN 133:107402
 TI Secondary **nonaqueous**-electrolyte **lithium** battery with long life
 IN Okuda, Masahisa; Hara, Kenji; Mashita, Kiyotaka
 PA Shin-Kobe Electric Machinery Co., Ltd., Japan; Hitachi Chemical Co., Ltd.
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01M004-62; H01M004-02
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38

FAN.CNT 1

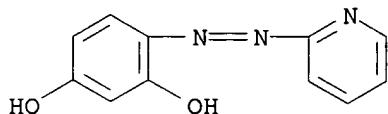
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | JP 2000195553 | A2 | 20000714 | JP 1998-301813 | 19981023 |
| PRAI | JP 1998-296623 | A | 19981019 | | |
| AB | In the title battery containing $\text{Li}_{x}\text{MnyO}_2$ ($x = 0.4\text{--}1.35$; $y = 0.65\text{--}1$) as cathode active mass and C powder as anode active mass, the cathode and/or anode contains ≥ 1 additive selected from chelating agents, polyimides, chelating polymers, ion exchanger, and azole derivs for long cycle life. | | | | |
| ST | lithium battery long cycle life; chelating agent additive active mass lithium battery; polyimide additive active mass lithium battery; ion exchanger additive active mass lithium battery; azole deriv additive active mass lithium battery | | | | |
| IT | Battery electrodes Chelating agents Ion exchangers (nonaq. -electrolyte Li battery containing chelating agent or polymer, polyimide, ion exchanger, and/or azole derivative in active mass for long cycle life) | | | | |
| IT | Polyimides, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (nonaq. -electrolyte Li battery containing chelating agent or polymer, polyimide, ion exchanger, and/or azole derivative in active mass for long cycle life) | | | | |
| IT | Polyamines RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (polyalkylene-, chelating polymer; nonaq. -electrolyte | | | | |

Li battery containing chelating agent or polymer, polyimide, ion exchanger, and/or azole derivative in active mass for long cycle life)

IT 1141-59-9, 4-(2-Pyridylazo)resorcinol 25036-53-7 25038-81-7,
 4,4'-Diaminodiphenyl ether-pyromellitic acid dianhydride copolymer
 31070-01-6 57916-98-0, Diaion CR 20 133976-35-9, IXE 300 283584-68-9
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (nonaq.-electrolyte Li battery containing chelating agent or polymer, polyimide, ion exchanger, and/or azole derivative in active mass for long cycle life)

IT 1141-59-9, 4-(2-Pyridylazo)resorcinol
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (nonaq.-electrolyte Li battery containing chelating agent or polymer, polyimide, ion exchanger, and/or azole derivative in active mass for long cycle life)

RN 1141-59-9 HCAPLUS
 CN 1,3-Benzenediol, 4-(2-pyridinylazo)- (9CI) (CA INDEX NAME)



L26 ANSWER 23 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2000:474496 HCAPLUS
 DN 133:91990
 TI Secondary **nonaqueous** electrolyte lithium ion battery containing chelating agent or crown ether
 IN Okuda, Masahisa; Hara, Kenji; Mashimo, Kiyotaka
 PA Shin-Kobe Electric Machinery Co., Ltd., Japan; Hitachi Chemical Co., Ltd.
 SO Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01M004-58
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|----------|
| PI | JP 2000195548 | A2 | 20000714 | JP 1998-301814 | 19981023 |
| PRAI | JP 1998-296624 | A | 19981019 | | |
| AB | The battery has an cathode containing $\text{Li}_x\text{Mn}_y\text{O}_2$ ($x = 0.4-1.35$; $y = 0.65-1$), an anode containing powdered C, and a nonaq. electrolyte containing a chelating agent or a crown ether forming a complex with Mn. The Mn ion dissolved from the cathode is trapped by the agent or the ether to prevent Mn deposition on the anode, so that the battery has improved cycle life at high temperature | | | | |
| ST | chelating agent electrolyte lithium ion battery; crown ether electrolyte lithium ion battery; lithium ion battery electrolyte manganese trapping | | | | |
| IT | Battery electrolytes Chelating agents (Li ion battery using nonaq. electrolyte containing | | | | |

chelating agent or crown ether for trapping Mn ion for high-temperature cycle life)

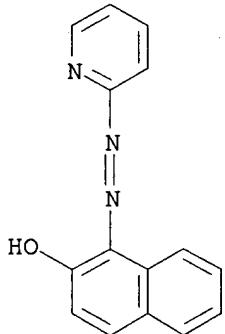
IT Crown ethers
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(Li ion battery using **nonaq.** electrolyte containing chelating agent or crown ether for trapping Mn ion for high-temperature cycle life)

IT Secondary batteries
(lithium; Li ion battery using **nonaq.** electrolyte containing chelating agent or crown ether for trapping Mn ion for high-temperature cycle life)

IT **85-85-8**, 1-(2-Pyridylazo)-2-naphthol 123-54-6, Acetylacetone, uses 294-93-9, 12-Crown-4-ether 17455-13-9, 18-Crown-6-ether
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(Li ion battery using **nonaq. electrolyte** containing chelating agent or crown ether for trapping Mn ion for high-temperature cycle life)

IT **85-85-8**, 1-(2-Pyridylazo)-2-naphthol
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(Li ion battery using **nonaq. electrolyte** containing chelating agent or crown ether for trapping Mn ion for high-temperature cycle life)

RN 85-85-8 HCPLUS
CN 2-Naphthalenol, 1-(2-pyridinylazo)- (9CI) (CA INDEX NAME)

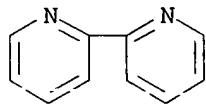


L26 ANSWER 24 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
AN 2000:378200 HCPLUS
DN 132:350305
TI **Nonaqueous** electrolyte batteries
IN Maruta, Junichi
PA Japan Storage Battery Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-58
ICS H01M004-02; H01M010-40; C07D213-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | JP 2000156224 | A2 | 20000606 | JP 1998-327241 | 19981117 |
| | FR 2786029 | A1 | 20000519 | FR 1999-14424 | 19991117 |
| | CN 1254197 | A | 20000524 | CN 1999-123891 | 19991117 |
| | US 6472100 | B1 | 20021029 | US 1999-442241 | 19991117 |
| PRAI | JP 1998-327241 | A | 19981117 | | |
| AB | The batteries use Al containing NiOOH for cathode active mass. The active mass may also contain Co, and the electrolyte for the batteries may contain a heterocyclic compound containing N atoms having unshared electron pairs, e.g., pyridine derivs. | | | | |
| ST | nonaq battery aluminum nickel oxyhydroxide cathode; cobalt aluminum nickel oxyhydroxide battery cathode; pyridine deriv nonaq electrolyte nickel battery | | | | |
| IT | Battery cathodes (aluminum and cobalt containing nickel oxyhydroxide cathodes for secondary lithium batteries) | | | | |
| IT | Secondary batteries (lithium ; aluminum and cobalt containing nickel oxyhydroxide cathodes and heterocyclic additive containing electrolytes for secondary lithium batteries) | | | | |
| IT | Battery electrolytes (nonaq . electrolyte solns. containing heterocyclic additives for secondary lithium /nickel oxyhydroxide batteries) | | | | |
| IT | 12026-04-9, Nickel hydroxide oxide (NiOOH) RL: DEV (Device component use); USES (Uses) (aluminum and cobalt containing nickel oxyhydroxide cathodes for secondary lithium batteries) | | | | |
| IT | 7429-90-5, Aluminum, uses 7440-48-4, Cobalt, uses RL: MOA (Modifier or additive use); USES (Uses) (aluminum and cobalt containing nickel oxyhydroxide cathodes for secondary lithium batteries) | | | | |
| IT | 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 7791-03-9, Lithium perchlorate RL: DEV (Device component use); USES (Uses) (nonaq . electrolyte solns. containing heterocyclic additives for secondary lithium /nickel oxyhydroxide batteries) | | | | |
| IT | 66-71-7, 1,10-Phenanthroline 85-02-9, Benzo[f]quinoline 91-19-0, Quinoxaline 91-22-5, Quinoline, uses 92-82-0, Phenazine 110-86-1, Pyridine, uses 119-65-3, Isoquinoline 229-87-8, Phenanthridine 230-17-1, Benzo[c]cinnoline 230-27-3, Benzo[h]quinoline 253-52-1, Phthalazine 253-66-7, Cinnoline 253-82-7, Quinazoline 254-60-4, 1,8-Naphthyridine 260-32-2, Benz[g]isoquinoline 260-36-6, Benzo[g]quinoline 260-94-6, Acridine 274-40-8, Indolizine 289-80-5, Pyridazine 290-87-9, 1,3,5-Triazine 290-96-0, 1,2,4,5-Tetrazine 366-18-7 , 2,2'-Bipyridine 25002-56-6, 4H-Quinolizine RL: MOA (Modifier or additive use); USES (Uses) (nonaq . electrolyte solns. containing heterocyclic additives for secondary lithium /nickel oxyhydroxide batteries) | | | | |
| IT | 366-18-7 , 2,2'-Bipyridine RL: MOA (Modifier or additive use); USES (Uses) (nonaq . electrolyte solns. containing heterocyclic additives for secondary lithium /nickel oxyhydroxide batteries) | | | | |
| RN | 366-18-7 HCAPLUS | | | | |

CN 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



L26 ANSWER 25 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2000:363825 HCAPLUS
 DN 133:7066
 TI **Non-aqueous** electrolytic solution battery
 IN Shimizu, Ryuichi
 PA NEC Mobile Energy K. K., Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01M010-40; H01M004-02; H01M004-58
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|----------|
| PI | JP 2000149989 | A2 | 20000530 | JP 1999-232496 | 19990819 |
| | JP 3163078 | B2 | 20010508 | | |
| | KR 2000017619 | A | 20000325 | KR 1999-36098 | 19990828 |
| | US 6291107 | B1 | 20010918 | US 1999-385967 | 19990830 |
| PRAI | JP 1998-245332 | A | 19980831 | | |
| OS | MARPAT 133:7066 | | | | |
| AB | This non-aqueous electrolytic solution battery contains a non-aqueous electrolytic solution containing ≥ 1 anionic polymerizable monomers capable of forming a coating on the surface of an anode, which consists of a carbonaceous material capable of doping and dedoping Li, at the time of charging. Without affecting solubility and ion conductivity of the supporting electrolytic substance, addition of the anionic monomers to the electrolytic solution suppresses reaction between the anode and the electrolytic solution, resulting in high discharging capacity even after repeated charging and discharging cycles. The battery is useful for portable elec. appliances, e.g. cellular phones and note-type personal computers. | | | | |
| ST | electrolytic soln anionic monomer addn battery; acrylic monomer addn electrolytic soln battery; vinyl monomer addn electrolytic soln battery | | | | |
| IT | Carbon black, uses RL: DEV (Device component use); USES (Uses) (anode active mass containing; non-aqueous electrolytic lithium battery with high and stable discharging capacity by addition of anionic monomer to electrolytic solution) | | | | |
| IT | Secondary batteries (lithium; non-aqueous electrolytic lithium battery with high and stable discharging capacity by addition of anionic monomer to electrolytic solution) | | | | |
| IT | Battery electrolytes (non-aqueous electrolytic lithium battery with high and stable discharging capacity by addition of anionic monomer to electrolytic solution) | | | | |

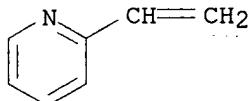
IT 78-79-5, Isoprene, uses 80-62-6, Methyl methacrylate 88-12-0, uses 100-42-5, Styrene, uses 100-69-6, 2-Vinylpyridine 103-26-4, Methyl cinnamate 103-36-6, Ethyl cinnamate 123-35-3, Myrcene 140-88-5, Ethyl acrylate 141-32-2, Butyl acrylate 1072-63-5, 1-Vinylimidazole 8013-90-9, Ionone
 RL: MOA (Modifier or additive use); USES (Uses)
 (additive to **electrolyte; non-aqueous electrolytic lithium** battery with high and stable discharging capacity by addition of anionic monomer to **electrolytic solution**)

IT 39457-42-6, Lithium manganese oxide
 RL: DEV (Device component use); USES (Uses)
 (cathode active mass containing; **non-aqueous electrolytic lithium** battery with high and stable discharging capacity by addition of anionic monomer to **electrolytic solution**)

IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (meso, graphitized, anode active mass containing; **non-aq electrolytic lithium** battery with high and stable discharging capacity by addition of anionic monomer to **electrolytic solution**)

IT 100-69-6, 2-Vinylpyridine
 RL: MOA (Modifier or additive use); USES (Uses)
 (additive to **electrolyte; non-aqueous electrolytic lithium** battery with high and stable discharging capacity by addition of anionic monomer to **electrolytic solution**)

RN 100-69-6 HCPLUS
 CN Pyridine, 2-ethenyl- (9CI) (CA INDEX NAME)

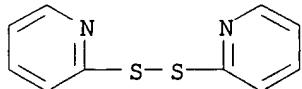


L26 ANSWER 26 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
 AN 2000:363824 HCPLUS
 DN 133:7065
 TI **Nonaqueous** electrolyte solutions containing disulfides and secondary **lithium** batteries using them
 IN Hamamoto, Shunichi; Abe, Hiroshi; Takai, Tsutomu; Matsumori, Yasuo
 PA Ube Industries, Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 2

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| ----- | ---- | ----- | ----- | ----- |
| PI JP 2000149986 | A2 | 20000530 | JP 1999-91496 | 19990331 |
| PRAI JP 1998-248975 | A | 19980903 | | |
| OS MARPAT 133:7065 | | | | |
| AB The electrolyte solns. contain disulfides R ₁ SSR ₂ (R ₁ , R ₂ = benzyl, tolyl, | | | | |

pyridyl, pyrimidyl, C1-12 alkyl, C3-6 cycloalkyl). Secondary Li batteries using the electrolyte solns. show high capacity and long cycle life.

ST lithium battery electrolyte disulfide
 IT Secondary batteries
 (lithium; nonaq. electrolyte solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)
 IT Battery electrolytes
 (nonaq. electrolyte solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)
 IT Disulfides
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)
 IT 21324-40-3, Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte; nonaq. electrolyte solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)
 IT 96-49-1, Ethylene carbonate 103-19-5, Di(p-tolyl) disulfide 544-40-1, Dibutyl sulfide 616-38-6, Dimethyl carbonate 2127-03-9, 2,2'-Dipyridyl disulfide
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)
 IT 2127-03-9, 2,2'-Dipyridyl disulfide
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)
 RN 2127-03-9 HCPLUS
 CN Pyridine, 2,2'-dithiobis- (9CI) (CA INDEX NAME)

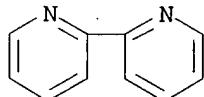


L26 ANSWER 27 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
 AN 1999:261931 HCPLUS
 DN 130:299353
 TI Secondary nonaqueous electrolyte batteries
 IN Maruta, Junichi
 PA Japan Storage Battery Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01M004-02; H01M004-52
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|-------|-------|-----------------|-------|
| ----- | ----- | ----- | ----- | ----- |

PI JP 11111335 A2 19990423 JP 1997-325328 19971110
 PRAI JP 1997-227259 19970808

AB The batteries use NiOOH cathode active mass and an electrolyte solution containing a N heterocyclic compound having lone pair electrons on the N atom.
 ST battery nickel hydroxide oxide cathode; electrolyte nitrogen heterocyclic compd nickel battery
 IT Battery electrolytes
 (electrolyte solns. containing nitrogen heterocyclic compds. for secondary lithium batteries with nickel hydroxide oxide cathodes)
 IT Secondary batteries
 (lithium; secondary lithium batteries with nickel hydroxide oxide cathodes and electrolyte solns. containing nitrogen heterocyclic compds.)
 IT Battery cathodes
 (secondary lithium batteries with nickel hydroxide oxide cathodes and electrolyte solns. containing nitrogen heterocyclic compds.)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 7791-03-9,
 Lithium perchlorate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing nitrogen heterocyclic compds. for secondary lithium batteries with nickel hydroxide oxide cathodes)
 IT 66-71-7, 1,10-Phenanthroline 85-02-9, Benzo[f]quinoline 91-18-9,
 Pteridine 91-19-0, Quinoxaline 91-22-5, Quinoline, uses 92-82-0,
 Phenazine 110-86-1, Pyridine, uses 119-65-3, Isoquinoline 229-87-8,
 Phenanthridine 230-17-1, Benzo[c]cinnoline 230-27-3, Benzo[h]quinoline
 253-52-1, Phthalazine 253-66-7, Cinnoline 253-82-7, Quinazoline
 254-60-4, 1,8-Naphthyridine 260-32-2, Benz[g]isoquinoline 260-36-6,
 Benzo[g]quinoline 260-94-6, Acridine 274-40-8, Indolizine 289-80-5,
 Pyridazine 289-95-2, Pyrimidine 290-37-9, Pyrazine 290-87-9,
 1,3,5-Triazine 290-96-0, 1,2,4,5-Tetrazine 366-18-7,
 2,2'-Bipyridine 25002-56-6, 4H-Quinolizine
 RL: MOA (Modifier or additive use); USES (Uses)
 (nitrogen heterocyclic compds. in electrolyte solns. for secondary lithium batteries with nickel hydroxide oxide cathodes)
 IT 55070-72-9, Nickel hydroxide oxide
 RL: DEV (Device component use); USES (Uses)
 (secondary lithium batteries with nickel hydroxide oxide cathodes and electrolyte solns. containing nitrogen heterocyclic compds.)
 IT 366-18-7, 2,2'-Bipyridine
 RL: MOA (Modifier or additive use); USES (Uses)
 (nitrogen heterocyclic compds. in electrolyte solns. for secondary lithium batteries with nickel hydroxide oxide cathodes)
 RN 366-18-7 HCPLUS
 CN 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



L26 ANSWER 28 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
 AN 1998:466276 HCPLUS
 DN 129:83778

TI **Lithium batteries using electrolyte solutions containing halogenated solvents and nitrogen compounds**
 IN Kusumoto, Yasuyuki; Yoshimura, Seishi; Noma, Toshiyuki; Nishio, Akiji
 PA Sanyo Electric Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M006-16

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------------|----------------|----------|-----------------|----------|
| PI JP 10189008 | A2 | 19980721 | JP 1996-357963 | 19961227 |
| PRAI | JP 1996-357963 | | | |

AB The batteries use electrolyte solns. containing halogenated solvent and N compound additives selected from pyridine, pyrazine, aniline, their derivs., alkyl nitrile, N,N-dialkyl acetamide, N-alkyl formamide, trialkylamine, and N-Me 2-pyrrolidone. The halogenated solvent is halogenated products of propylene carbonate, demethyl carbonate, THF, 1,2-dimethoxy ethane, γ -butyrolactone, and/or thiophene.

ST lithium battery halogenated electrolyte solvent; nitrogen compd
 lithium battery electrolyte additive

IT Battery electrolytes

 (electrolyte solns. containing halogenated solvents and nitrogen compds.
 for lithium batteries)

IT Organic compounds, uses

 RL: MOA (Modifier or additive use); USES (Uses)
 (nitrogen-containing; electrolyte solns. containing halogenated solvents and
 nitrogen compds. for lithium batteries)

IT Solvents

 (organic, halogenated; electrolyte solns. containing halogenated
 solvents and nitrogen compds. for lithium batteries)

IT 108-32-7 112-26-5, 1,2-Bis(2-chloroethoxy)ethane 1192-30-9,
 Tetrahydrofurfuryl bromide 3003-84-7, Tetrahydrofurfuryl chloride
 5061-21-2, α -Bromo- γ -butyrolactone 5659-86-9 33454-82-9,
 Lithium trifluoromethanesulfonate 62146-87-6, Iodothiophene
 167951-80-6

 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing halogenated solvents and nitrogen compds.
 for lithium batteries)

IT 75-05-8, Acetonitrile, uses 102-69-2, Tri-n-propylamine **109-06-8**
 , 2-Picoline 110-86-1, Pyridine, uses 121-44-8, uses 121-69-7,
 N,N-Dimethylaniline, uses 123-39-7, N-Methyl formamide 290-37-9,
 Pyrazine 872-50-4, uses

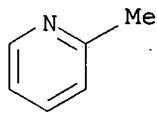
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing halogenated solvents and nitrogen
 compds. for lithium batteries)

IT **109-06-8**, 2-Picoline

 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing halogenated solvents and nitrogen
 compds. for lithium batteries)

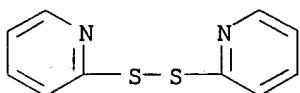
RN 109-06-8 HCPLUS

CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



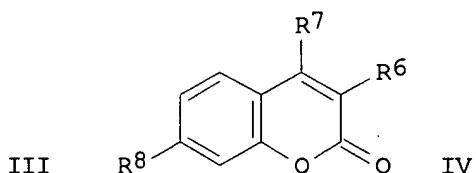
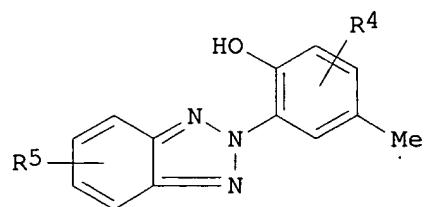
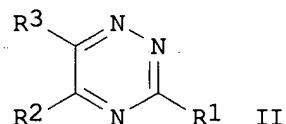
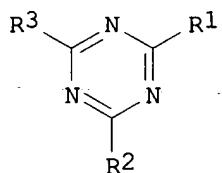
L26 ANSWER 29 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1998:410521 HCAPLUS
 DN 129:56503
 TI Secondary **lithium** batteries
 IN Tsutsumi, Seiki; Horiuchi, Hiroshi; Watanabe, Isao; Miyashita, Tsutomu;
 Akaishi, Shinobu
 PA Fujitsu Ltd., Japan
 SO Jpn. Kokai Tokyo Koho, 8 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|----------------------------------|----------|-----------------|----------|
| PI | JP 10172604 | A2 | 19980626 | JP 1996-323074 | 19961203 |
| PRAI | JP 1996-323074 | | 19961203 | | |
| AB | The batteries use Li or Li alloy anodes, Li containing metal oxide cathodes, and a nonaq. Li salt electrolyte solution; where the electrolyte solution contains 2,2'-dithiodipyridine, its derivs., or nitrosoamine compds. | | | | |
| ST | thiodipyridine lithium battery electrolyte additive; nitrosoamine additive lithium battery electrolyte | | | | |
| IT | Battery electrolytes (lithium salt electrolyte solns. containing dithiodipyridine derivs. and nitrosoamine compds. for secondary lithium batteries) | | | | |
| IT | 96-49-1, Ethylene carbonate | 616-38-6, Dimethyl carbonate | | 21324-40-3, | |
| | Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (lithium salt electrolyte solns. containing dithiodipyridine derivs. and nitrosoamine compds. for secondary lithium batteries) | | | | |
| IT | 55-18-5, N-Nitroso diethylamine | 2127-03-9, 2,2'-Dithiodipyridine | | | |
| | RL: MOA (Modifier or additive use); USES (Uses) (lithium salt electrolyte solns. containing dithiodipyridine derivs. and nitrosoamine compds. for secondary lithium batteries) | | | | |
| IT | 2127-03-9, 2,2'-Dithiodipyridine | | | | |
| | RL: MOA (Modifier or additive use); USES (Uses) (lithium salt electrolyte solns. containing dithiodipyridine derivs. and nitrosoamine compds. for secondary lithium batteries) | | | | |
| RN | 2127-03-9 | HCAPLUS | | | |
| CN | Pyridine, 2,2'-dithiobis- (9CI) (CA INDEX NAME) | | | | |



L26 ANSWER 30 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1998:135454 HCAPLUS
 DN 128:182558
 TI Secondary **nonaqueous** electrolyte batteries containing heterocyclic compounds
 IN Ito, Miho
 PA Nippondenso Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01M010-40; H01M004-02
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----------------------|------|----------|-----------------|----------|
| PI JP 10050344 | A2 | 19980220 | JP 1996-299547 | 19961022 |
| PRAI JP 1996-157635 | | 19960528 | | |
| OS MARPAT 128:182558 | | | | |
| GI | | | | |



AB The batteries use Li intercalating anodes and a cathodes and a **nonaq.** electrolyte containing heterocyclic compound additives selected from triazine, 2-(benzotriazol-2-yl)-p-cresol, coumarin, and their derivs. The additives are preferably I-IV, where R¹, R², R³, R⁴, R⁵ are H, Me, Et, NH₂, OH, CH₂CH₂, 2-pyridyl, or C₆H₅; and R⁷ and R⁸ are H, Me, Et, NH₂, OH, COOH, COMe, or CF₃.
 ST lithium battery electrolyte heterocyclic compd additive;
 triazine deriv lithium battery electrolyte additive;
 benzotriazole cresol lithium battery electrolyte additive;
 coumarin deriv lithium battery electrolyte additive

IT Battery electrolytes
 (electrolytes containing heterocyclic compound additives for secondary lithium batteries)

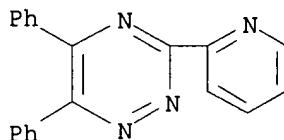
IT 96-49-1, Ethylene carbonate 110-71-4 616-38-6, Dimethyl carbonate 21324-40-3, Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (electrolytes containing heterocyclic compound additives for secondary lithium batteries)

IT 90-33-5, 4-Methylumbelliferone 91-64-5, Coumarin 108-78-1, 2,4,6-Triamino-1,3,5-triazine, uses 290-87-9, 1,3,5-Triazine 531-81-7, Coumarin-3-carboxylic acid 542-02-9 645-92-1 **1046-56-6**, 5,6-Diphenyl-3-(2-pyridyl)-1,2,4-triazine 2073-31-6 2440-22-4, 2-(2H-Benzotriazol-2-yl)-p-cresol 3194-70-5 3949-36-8, 3-Acetyl coumarin 17584-12-2, 3-Amino-5,6-dimethyl-1,2,4-triazine 53518-15-3, 7-Amino-4-(trifluoromethyl)coumarin
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolytes containing heterocyclic compound additives for secondary lithium batteries)

IT **1046-56-6**, 5,6-Diphenyl-3-(2-pyridyl)-1,2,4-triazine
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolytes containing heterocyclic compound additives for secondary lithium batteries)

RN 1046-56-6 HCAPLUS

CN 1,2,4-Triazine, 5,6-diphenyl-3-(2-pyridinyl)- (9CI) (CA INDEX NAME)



L26 ANSWER 31 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1997:557848 HCAPLUS
 DN 127:208163
 TI **Nonaqueous** electrolyte battery containing heterocyclic azo compounds
 IN Kusumoto, Yasuyuki; Yamazaki, Mikiya; Yanai, Atsushi; Noma, Toshiyuki; Nishio, Koji
 PA Sanyo Electric Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M006-16
 ICS H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|----------|
| PI | JP 09213348 | A2 | 19970815 | JP 1996-16137 | 19960131 |
| PRAI | JP 1996-16137 | | 19960131 | | |
| AB | Claimed batteries use electrolyte solns. containing 0.01-20.0 weight% ≥1 of additives selected from 2-picoline, 3-picoline, 4-picoline, 2,4-dimethylpyridine, piperazine, pyridazine, pyrimidine, pyrazine, 1,3,5-triazine, and 1,2,4,5-tetrazine. The batteries suppress self | | | | |

discharge and have good storage stability.

ST picoline additive lithium battery electrolyte; pyridine additive lithium battery electrolyte

IT Primary batteries
(lithium; nonaq. electrolyte battery containing heterocyclic azo compds. for suppressing self discharge)

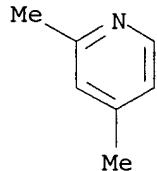
IT Battery electrolytes
(nonaq. electrolyte battery containing heterocyclic azo compds. for suppressing self discharge)

IT 108-47-4, 2,4-Dimethylpyridine 108-89-4, 4-Picoline
108-99-6, 3-Picoline 109-06-8, 2-Picoline 110-85-0,
Piperazine, uses 289-80-5, Pyridazine 289-95-2, Pyrimidine 290-37-9,
Pyrazine 290-87-9, 1,3,5-Triazine 290-96-0, 1,2,4,5-Tetrazine
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(nonaq. electrolyte battery containing heterocyclic azo compds. for suppressing self discharge)

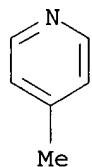
IT 108-47-4, 2,4-Dimethylpyridine 108-89-4, 4-Picoline
108-99-6, 3-Picoline 109-06-8, 2-Picoline
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(nonaq. electrolyte battery containing heterocyclic azo compds. for suppressing self discharge)

RN 108-47-4 HCPLUS

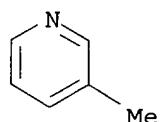
CN Pyridine, 2,4-dimethyl- (9CI) (CA INDEX NAME)



RN 108-89-4 HCPLUS
CN Pyridine, 4-methyl- (9CI) (CA INDEX NAME)

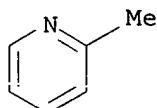


RN 108-99-6 HCPLUS
CN Pyridine, 3-methyl- (9CI) (CA INDEX NAME)



RN 109-06-8 HCPLUS

CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



L26 ANSWER 32 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1997:501255 HCAPLUS
 DN 127:178805
 TI Secondary **nonaqueous**-electrolyte battery
 IN Matsufuji, Akihiro; Ishizuka, Hiroshi; Negoro, Masayuki
 PA Fuji Photo Film Co., Ltd., Japan
 SO Eur. Pat. Appl., 20 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 IC ICM H01M004-48
 ICS H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

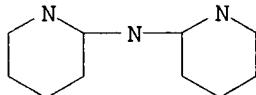
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|----------|
| PI | EP 785586 | A1 | 19970723 | EP 1997-100472 | 19970114 |
| | R: DE, FI, FR, GB | | | | |
| | JP 09199169 | A2 | 19970731 | JP 1996-5485 | 19960117 |
| | US 5759714 | A | 19980602 | US 1997-783243 | 19970114 |
| PRAI | JP 1996-5485 | A | 19960117 | | |
| AB | The battery comprises a cathode including a Li -intercalatable material; an anode comprising mainly an amorphous chalcogen compound and/or an amorphous oxide including ≥ 3 atoms selected from Group 1, 2, 13, 14, and 15 elements; a separator; and a nonaq. electrolyte containing a Li salt and ≥ 1 N-containing organic compound. The battery has excellent charge and discharge characteristics, and its decreases of discharge capacity due to repeated charging/discharging is small. | | | | |
| ST | battery lithium ion nonaq electrolyte; electrolyte battery nitrogen contg org additive | | | | |
| IT | Secondary batteries (high-performance lithium -ion) | | | | |
| IT | Battery electrolytes (nonaq. with nitrogen-containing organic compound additive) | | | | |
| IT | 193217-88-8 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (anodes for nonaq. -electrolyte battery) | | | | |
| IT | 12190-79-3, Cobalt lithium oxide (CoLiO ₂) RL: DEV (Device component use); USES (Uses) (cathodes for nonaq. -electrolyte battery) | | | | |
| IT | 169938-66-3, Cobalt lithium oxide (CoLi0.2-1.2O ₂) 169938-67-4, Lithium Nickel oxide (Li0.2-1.2NiO ₂) 169938-68-5, Cobalt Lithium nickel oxide (Co0.1-0.9Li0.2-1.2Ni0.1-0.9O ₂) 169938-71-0, Lithium manganese oxide (Li0.2-1.2Mn2O ₄) 169938-72-1, Cobalt lithium manganese oxide (Co0.04-0.4Li0.2-1.2Mn1.6-1.96O ₄) 169938-73-2, Lithium manganese nickel oxide (Li0.2-1.2Mn1.6-1.96Ni0.04-0.4O ₄) 169938-74-3, Lithium | | | | |

manganese vanadium oxide (Li_{0.2-1.2}Mn_{1.6-1.96}V_{0.04-0.404}) 169938-75-4,
 Iron lithium manganese oxide (Fe_{0.04-0.4}Li_{0.2-1.2}Mn_{1.6-1.96}O₄)
 191536-37-5, Lithium manganese oxide (Li_{0.2-1.2}MnO₂)
 193955-18-9, Cobalt lithium vanadium oxide (Co_{0.8-0.9}Li_{0.2-1.2}V_{0.1-0.202}) 193955-19-0, Cobalt iron lithium oxide
 (Co_{0.8-0.9}Fe_{0.1-0.2}Li_{0.2-1.202})
 RL: TEM (Technical or engineered material use); USES (Uses)
 (cathodes for nonaq.-electrolyte battery)

IT 66-71-7, 1,10-Phenanthroline 102-82-9, Tributylamine 122-39-4,
 Diphenylamine, uses 280-57-9, 1,4-Diazabicyclo[2.2.2]octane
1202-34-2, 2,2'-Dipyridylamine 6674-22-2 7087-68-5,
 Diisopropylethylamine
 RL: MOA (Modifier or additive use); USES (Uses)
 (lithium ion nonaq.-electrolyte battery
 electrolyte containing)

IT **1202-34-2**, 2,2'-Dipyridylamine
 RL: MOA (Modifier or additive use); USES (Uses)
 (lithium ion nonaq.-electrolyte battery
 electrolyte containing)

RN 1202-34-2 HCPLUS
 CN 2-Pyridinamine, N-2-pyridinyl- (9CI) (CA INDEX NAME)



*** FRAGMENT DIAGRAM IS INCOMPLETE ***

L26 ANSWER 33 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
 AN 1997:394087 HCPLUS
 DN 127:37114
 TI Electrolyte solutions for secondary lithium batteries and the batteries
 IN Tsutsumi, Masaki; Watanabe, Isao; Miyashita, Tsutomu; Yoshio, Masayuki;
 Nakamura, Hirokichi
 PA Fujitsu Ltd., Japan
 SO Jpn. Kokai Tokyo Koho, 9 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | JP 09106833 | A2 | 19970422 | JP 1995-261681 | 19951009 |
| PRAI | JP 1995-261681 | | 19951009 | | |
| AB | The electrolyte solns. contain an electrolyte, an organic solvent, and an additive selected from 2,4'-bipyridine, 4,4'-bipyridine, 4,4'-dimethyl-2,2'-bipyridine, 2-(p-tolyl)pyridine, 2,2'-dipyridylamine, 2,2'-dipicolylamine, 3,3'-dipicolylamine, 2,2'-biquinoline, 2-benzylpyridine, 3-phenylpyridine, 4-phenylpyridine, 2,2':6',2''-terpyridine, and 1,10-phenanthroline derivative. The phenanthroline derivative is a phenanthroline with 1-4 substituents selected | | | | |

from halogen, Cl-3 alkyl, Ph, and OH. Li batteries using these electrolyte solns. have long cycle life.

ST lithium battery electrolyte additive; bipyridine deriv
lithium battery electrolyte additive; pyridine deriv
lithium battery electrolyte additive; phenanthroline deriv
lithium battery electrolyte additive; amine deriv lithium
battery electrolyte additive

IT Amines, uses
RL: MOA (Modifier or additive use); USES (Uses)
(additives for electrolyte solns. for secondary lithium
batteries)

IT Battery electrolytes
(additives for electrolyte solns. in secondary lithium
batteries for cycle life)

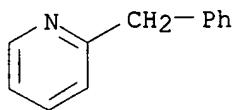
IT 101-82-6, 2-Benzylpyridine 119-91-5, 2,2'-Biquinoline
484-11-7, 2,9-Dimethyl-1,10-phenanthroline 553-26-4,
4,4'-Bipyridine 581-47-5, 2,4'-Bipyridine 939-23-1
1008-88-4, 3-Phenylpyridine 1134-35-6,
4,4'-Dimethyl-2,2'-Bipyridine 1148-79-4, 2,2':6',2''-Terpyridine
1202-34-2, 2,2'-Dipyridylamine 1539-42-0,
2,2'-Dipicolylamine 1656-94-6 1660-93-1, 3,4,7,8-Tetramethyl-
1,10-phenanthroline 1662-01-7, 4,7-Diphenyl-1,10-phenanthroline
2747-15-1 3002-77-5, 2-Methyl-1,10-phenanthroline 3002-78-6,
5-Methyl-1,10-phenanthroline 3002-80-0, 3,8-Dimethyl-1,10-phenanthroline
3002-81-1, 5,6-Dimethyl-1,10-phenanthroline 3002-82-2,
3,4-Dimethyl-1,10-phenanthroline 3248-05-3, 4,7-Dimethyl-1,10-
phenanthroline 3248-06-4 3309-34-0 3922-40-5, 4,7-Dihydroxy-1,10-
phenanthroline 4199-88-6, 5-Nitro-1,10-phenanthroline 4199-89-7,
5-Chloro-1,10-phenanthroline 4467-06-5, 2-(p-Tolyl)-pyridine
4733-39-5, 2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline 17044-07-4,
1,10-Phenanthroline, 3-methyl- 31301-28-7, 4-Methyl-1,10-phenanthroline
40000-20-2, 5-Bromo-1,10-phenanthroline 107919-97-1 107919-98-2
108714-04-1 108714-05-2 108714-06-3 108715-43-1 190392-97-3
190392-99-5 190393-01-2 190393-10-3 190393-12-5 190393-13-6
190393-15-8
RL: MOA (Modifier or additive use); USES (Uses)
(additives for **electrolyte** solns. for secondary
lithium batteries)

IT 66-71-7, 1,10-Phenanthroline
RL: MOA (Modifier or additive use); USES (Uses)
(derivative; additives for electrolyte solns. for secondary lithium
batteries)

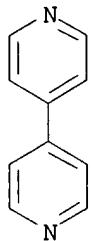
IT 110-86-1, Pyridine, uses 37275-48-2, Bipyridine
RL: MOA (Modifier or additive use); USES (Uses)
(derivs.; additives for electrolyte solns. for secondary
lithium batteries)

IT 101-82-6, 2-Benzylpyridine 553-26-4, 4,4'-Bipyridine
581-47-5, 2,4'-Bipyridine 939-23-1 1008-88-4,
3-Phenylpyridine 1134-35-6, 4,4'-Dimethyl-2,2'-Bipyridine
1148-79-4, 2,2':6',2''-Terpyridine 1202-34-2,
2,2'-Dipyridylamine 1539-42-0, 2,2'-Dipicolylamine
1656-94-6 4467-06-5, 2-(p-Tolyl)-pyridine
RL: MOA (Modifier or additive use); USES (Uses)
(additives for **electrolyte** solns. for secondary
lithium batteries)

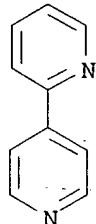
RN 101-82-6 HCPLUS
CN Pyridine, 2-(phenylmethyl)- (9CI) (CA INDEX NAME)



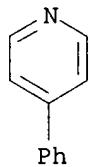
RN 553-26-4 HCAPLUS
CN 4,4'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



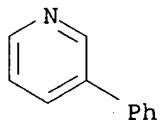
RN 581-47-5 HCAPLUS
CN 2,4'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



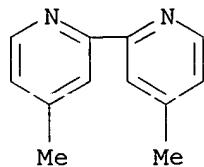
RN 939-23-1 HCAPLUS
CN Pyridine, 4-phenyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



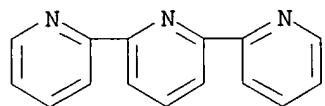
RN 1008-88-4 HCAPLUS
CN Pyridine, 3-phenyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



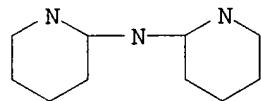
RN 1134-35-6 HCAPLUS
CN 2,2'-Bipyridine, 4,4'-dimethyl- (9CI) (CA INDEX NAME)



RN 1148-79-4 HCAPLUS
CN 2,2':6',2'''-Terpyridine (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

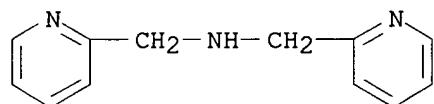


RN 1202-34-2 HCAPLUS
CN 2-Pyridinamine, N-2-pyridinyl- (9CI) (CA INDEX NAME)

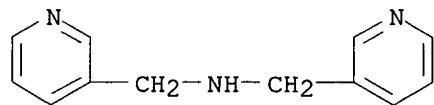


*** FRAGMENT DIAGRAM IS INCOMPLETE ***

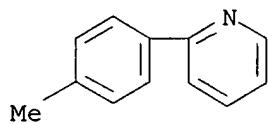
RN 1539-42-0 HCAPLUS
CN 2-Pyridinemethanamine, N-(2-pyridinylmethyl)- (9CI) (CA INDEX NAME)



RN 1656-94-6 HCAPLUS
CN 3-Pyridinemethanamine, N-(3-pyridinylmethyl)- (9CI) (CA INDEX NAME)



RN 4467-06-5 HCAPLUS
CN Pyridine, 2-(4-methylphenyl)- (9CI) (CA INDEX NAME)



L26 ANSWER 34 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1997:321050 HCAPLUS
 DN 127:21014
 TI Sulfide lithium secondary batteries and electrolytes for
nonaqueous batteries
 IN Naoi, Katsuhiko; Yamaguchi, Takitaro; Torigoe, Akihiko; Iizuka, Hiroshi
 PA Yazaki Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese
 IC ICM H01M004-60
 ICS H01M004-02; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 09082328 | A2 | 19970328 | JP 1995-232768 | 19950911 |
| | US 5792575 | A | 19980811 | US 1996-711853 | 19960910 |
| PRAI | JP 1995-232767 | | 19950911 | | |
| | JP 1995-232768 | | 19950911 | | |

AB Title **Li** secondary batteries using sulfides as cathode active mass have strong basic polymer films on the cathodes. Title electrolytes have strong basic polymer films.. Title batteries have long cycle life and high energy d.

ST lithium battery sulfide cathode basic polymer; electrolyte strong basic polymer **nonaq** battery; film basic polymer cathode lithium battery

IT Battery cathodes

Battery electrolytes
 (Li secondary batteries with sulfide cathodes and
nonaq. electrolytes having basic polymer films)

IT Sulfides, uses

RL: DEV (Device component use); USES (Uses)
 (cathode active mass; Li secondary batteries with sulfide cathodes and **nonaq**. electrolytes having basic polymer films)

IT Secondary batteries

(lithium; Li secondary batteries with sulfide cathodes and **nonaq**. electrolytes having basic polymer films)

IT 25232-41-1, Poly(4-vinylpyridine)

RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
 (Li secondary batteries with sulfide cathodes and
nonaq. electrolytes having basic polymer films)

IT 1072-71-5, 2,5-Dimercapto-1,3,4-thiadiazole

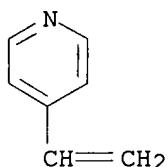
RL: DEV (Device component use); USES (Uses)
 (cathode active mass; Li secondary batteries with sulfide cathodes and **nonaq**. electrolytes having basic polymer films)

IT 7791-03-9, Lithium perchlorate

RL: DEV (Device component use); USES (Uses)
 (electrolytes; Li secondary batteries with sulfide cathodes

and **nonaq.** electrolytes having basic polymer films)
 IT 25232-41-1, Poly(4-vinylpyridine)
 RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
 (Li secondary batteries with sulfide cathodes and
nonaq. electrolytes having basic polymer films)
 RN 25232-41-1 HCAPLUS
 CN Pyridine, 4-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 100-43-6
CMF C7 H7 N

L26 ANSWER 35 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1997:321049 HCAPLUS
 DN 127:21013
 TI Sulfide-lithium secondary batteries and electrolytes for
nonaqueous batteries
 IN Naoi, Katsuhiko; Yamaguchi, Takitaro; Torigoe, Akihiko; Iizuka, Hiroshi
 PA Yazaki Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M004-60
 ICS H01M004-02; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 37
 FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | JP 09082327 | A2 | 19970328 | JP 1995-232767 | 19950911 |
| | US 5792575 | A | 19980811 | US 1996-711853 | 19960910 |
| PRAI | JP 1995-232767 | | 19950911 | | |
| | JP 1995-232768 | | 19950911 | | |
| AB | Title Li secondary batteries using sulfide cathode active mass contain strong basic polymers in the cathodes. Title electrolytes contain strong basic polymers. Title batteries have long cycle life and high energy d. | | | | |
| ST | lithium battery sulfide cathode basic polymer; electrolyte strong basic polymer nonaq battery | | | | |
| IT | Battery cathodes Battery electrolytes (Li secondary batteries with sulfide cathodes containing basic polymers and nonaq. battery electrolytes) | | | | |
| IT | Sulfides, uses RL: DEV (Device component use); USES (Uses) (cathode active mass; Li secondary batteries with sulfide | | | | |

cathodes containing basic polymers and **nonaq.** battery electrolytes)

IT Secondary batteries
 (lithium; Li secondary batteries with sulfide cathodes containing basic polymers and **nonaq.** battery electrolytes)

IT 9003-39-8, Polyvinylpyrrolidone **25232-41-1**, Poly(4-vinylpyridine)
 RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
 (Li secondary batteries with sulfide cathodes containing basic polymers and **nonaq.** battery electrolytes)

IT 1072-71-5, 2,5-Dimercapto-1,3,4-thiadiazole
 RL: DEV (Device component use); USES (Uses)
 (cathode active mass; Li secondary batteries with sulfide cathodes containing basic polymers and **nonaq.** battery electrolytes)

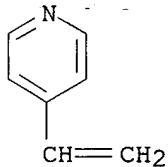
IT 7791-03-9, Lithium perchlorate
 RL: DEV (Device component use); USES (Uses)
 (electrolytes; Li secondary batteries with sulfide cathodes containing basic polymers and **nonaq.** battery electrolytes)

IT **25232-41-1**, Poly(4-vinylpyridine)
 RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
 (Li secondary batteries with sulfide cathodes containing basic polymers and **nonaq.** battery electrolytes)

RN 25232-41-1 HCAPLUS

CN Pyridine, 4-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

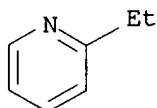
CM 1

CRN 100-43-6
CMF C7 H7 N

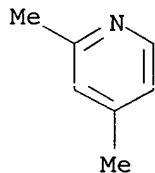
L26 ANSWER 36 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1996:38384 HCAPLUS
 DN 124:121930
 TI Effect of additives to the **nonaqueous** electrolyte on cycling performance of **lithium** anode for secondary **Li**-cells
 AU Nakamura, Hiroyoshi; Wang, Congxiao; Mitani, Eisaku; Fuzita, Toshimi; Yoshio, Masaki
 CS Fac. Sci. Eng., Saga Univ., Saga, 840, Japan
 SO Hyomen Gijutsu (1995), 46(12), 1187-8
 CODEN: HYGIEX; ISSN: 0915-1869
 DT Journal
 LA Japanese
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 72
 AB Charge-discharge cycling characteristics of **Li** anode for secondary **Li** batteries were examined in 1M LiPF₆/(CH₂)₂CO₃-

MeCHCH2CO3-(MeOCH2)2 (4:4:1) in the presence of anilines or pyridines as an additive. The cycling lifetime was increased with the donor number of the additive up to 30 and was 3 times longer with 2-MeC5H4N or 4-Me2NC6H4Me than that without additives. Potential measurements of anodic dissoln. and cathodic deposition of Li and a.c. impedance measurements indicated that the adsorption of 2-MeC5H4N on Li electrode surface depressed the formation of passive films to extend the cycling lifetime.

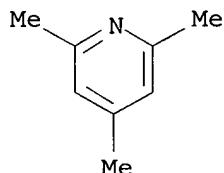
- ST lithium battery electrolyte additive; aniline electrolyte additive lithium battery
- IT Battery electrolytes
(effects of pyridine- or aniline additives to nonaq. electrolyte on cycling performance of lithium anode for lithium secondary batteries)
- IT Anodes
(battery, lithium; effects of pyridine- or aniline additives to nonaq. electrolyte on cycling performance of lithium anode for lithium secondary batteries)
- IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(battery anodes; effects of pyridine- or aniline additives to nonaq. electrolyte on cycling performance of lithium anode for lithium secondary batteries)
- IT 95-53-4, o-Toluidine, uses 99-97-8, N,N-Dimethyl-p-toluidine 100-61-8, N-Methylaniline, uses 100-71-0, 2-Ethylpyridine 108-47-4, 2,4-Dimethylpyridine 108-75-8, 2,4,6-Trimethylpyridine 108-89-4, 4-Methylpyridine 109-06-8, 2-Methylpyridine 110-86-1, Pyridine, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(effects of pyridine- or aniline additives to nonaq. electrolyte on cycling performance of lithium anode for lithium secondary batteries)
- IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4
21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(electrolyte component; effects of pyridine- or aniline additives to nonaq. electrolyte on cycling performance of lithium anode for lithium secondary batteries)
- IT 100-71-0, 2-Ethylpyridine 108-47-4, 2,4-Dimethylpyridine 108-75-8, 2,4,6-Trimethylpyridine 108-89-4, 4-Methylpyridine 109-06-8, 2-Methylpyridine
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(effects of pyridine- or aniline additives to nonaq. electrolyte on cycling performance of lithium anode for lithium secondary batteries)
- RN 100-71-0 HCPLUS
- CN Pyridine, 2-ethyl- (8CI, 9CI) (CA INDEX NAME)



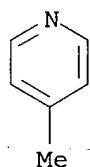
RN 108-47-4 HCAPLUS
CN Pyridine, 2,4-dimethyl- (9CI) (CA INDEX NAME)



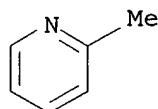
RN 108-75-8 HCAPLUS
CN Pyridine, 2,4,6-trimethyl- (8CI, 9CI) (CA INDEX NAME)



RN 108-89-4 HCAPLUS
CN Pyridine, 4-methyl- (9CI) (CA INDEX NAME)



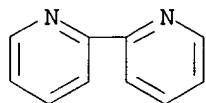
RN 109-06-8 HCAPLUS
CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



L26 ANSWER 37 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 1995:905695 HCAPLUS
DN 123:318806
TI **Nonaqueous** electrolyte solutions for secondary batteries
IN Adachi, Momoe
PA Sony Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | JP 07211351 | A2 | 19950811 | JP 1994-22151 | 19940120 |
| PRAI | JP 1994-22151 | | 19940120 | | |
| AB | The electrolyte solns. comprise solvents, Li compds., and multidentate chelating agents containing ≥ 2 N atoms as electron pair donating elements. Preferably, the multidentate chelating agents are bidentate chelating agents (e.g., 1,10-phenanthroline, 2,2'-bipyridyl, ethylenediamine) or tridentate chelating agents (e.g., terpyridine, diethylenetriamine). Resulting batteries have good charge-discharge performance, long cycle life, and rapid-charging properties. | | | | |
| ST | electrolyte multidentate chelating agent battery; lithium battery electrolyte chelating agent | | | | |
| IT | Battery electrolytes Chelating agents (electrolyte solns. containing Li compds. and multidentate chelating agents for batteries for cycle life and rapid charging) | | | | |
| IT | 66-71-7, 1,10-Phenanthroline 107-15-3, Ethylenediamine, uses 111-40-0, Diethylenetriamine 366-18-7, 2,2'-Bipyridyl 72847-58-6, Terpyridine RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (chelating agent; electrolyte solns. containing Li compds. and multidentate chelating agents for batteries for cycle life and rapid charging) | | | | |
| IT | 21324-40-3, Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (electrolyte; electrolyte solns. containing Li compds. and multidentate chelating agents for batteries for cycle life and rapid charging) | | | | |
| IT | 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate RL: DEV (Device component use); USES (Uses) (solvent; electrolyte solns. containing Li compds. and multidentate chelating agents for batteries for cycle life and rapid charging) | | | | |
| IT | 366-18-7, 2,2'-Bipyridyl RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (chelating agent; electrolyte solns. containing Li compds. and multidentate chelating agents for batteries for cycle life and rapid charging) | | | | |
| RN | 366-18-7 HCPLUS | | | | |
| CN | 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME) | | | | |



L26 ANSWER 38 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
 AN 1995:643598 HCPLUS
 DN 123:37257
 TI **Nonaqueous**-electrolyte secondary batteries

IN Suemori, Atsushi; Shoji, Yoshihiro; Yamamoto, Juji; Nishio, Koji; Saito, Toshihiko

PA Sanyo Electric Co, Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 07105977 | A2 | 19950421 | JP 1993-277708 | 19931008 |
| PRAI | JP 1993-277708 | | 19931008 | | |

AB The batteries use anodes of carbonaceous materials having interplanar spacing d002 ≤ 3.37 Å and a **nonaq.** electrolyte containing 0.1-1 weight% pyridine or its derivs. The pyridine additives prevent decomposition of the electrolytes on the anode surfaces and the batteries have long cycle life.

ST lithium battery electrolyte pyridine additive; picoline additive lithium battery electrolyte

IT Battery electrolytes

(secondary lithium batteries with carbonaceous anodes and **nonaq.** electrolytes containing pyridine derivative)

IT Carbonaceous materials

RL: DEV (Device component use); USES (Uses)
(secondary lithium batteries with carbonaceous anodes and **nonaq.** electrolytes containing pyridine derivative)

IT 21324-40-3, Lithium hexafluorophosphate (LiPF₆)

RL: DEV (Device component use); USES (Uses)
(secondary lithium batteries with carbonaceous anodes and **nonaq.** electrolytes containing pyridine derivative)

IT 108-89-4, γ-Picoline 108-99-6, β-Picoline

109-06-8, α-Picoline 110-86-1, Pyridine, uses

RL: MOA (Modifier or additive use); USES (Uses)
(secondary lithium batteries with carbonaceous anodes and **nonaq.** electrolytes containing pyridine derivative)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)
(secondary lithium batteries with graphite anodes and **nonaq.** electrolytes containing pyridine derivative)

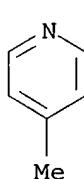
IT 108-89-4, γ-Picoline 108-99-6, β-Picoline

109-06-8, α-Picoline

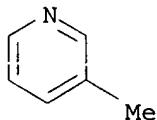
RL: MOA (Modifier or additive use); USES (Uses)
(secondary lithium batteries with carbonaceous anodes and **nonaq.** electrolytes containing pyridine derivative)

RN 108-89-4 HCPLUS

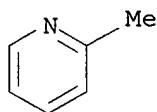
CN Pyridine, 4-methyl- (9CI) (CA INDEX NAME)



RN 108-99-6 HCAPLUS
 CN Pyridine, 3-methyl- (9CI) (CA INDEX NAME)



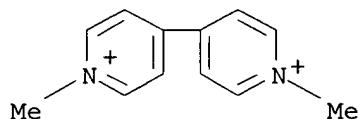
RN 109-06-8 HCAPLUS
 CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



L26 ANSWER 39 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1995:546901 HCAPLUS
 DN 122:270113
 TI Gelled electrolyte for photoelectrochemical systems, its synthesis and application
 IN Quinten, Werner; Crummenauer, Klaus
 PA Germany
 SO Ger. Offen., 4 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 IC ICM H01L051-00
 ICS H01G009-20; B05D001-00; H01M006-14; H01M006-22
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----------------------|---|----------|-----------------|----------|
| PI DE 4327114 | A1 | 19950330 | DE 1993-4327114 | 19930812 |
| PRAI DE 1993-4327114 | | 19930812 | | |
| AB | The electrolyte comprises organic solvents , salts 0.05-2.0, reducers 0.001-0.5 mol/L, H ₂ O 0.005-2.0 weight%, and gel-building components 0.001-50 mol%. The solvents include alcs., ketones, ethylene carbonate, propylene carbonate, MeCN, ether, and THF; the salts include Li, Na, K, NH ₄ , and quaternary ammonium salts; the reducers include Br, I, quinone, hydroquinone, and Me viologen; and the gel-building components include PEO, polypropylene oxide, polyethylene glycols, etc. | | | |
| ST | electrolyte gelled photoelectrochem system | | | |
| IT | Alcohols, uses Ketones, uses Quaternary ammonium compounds, uses RL: TEM (Technical or engineered material use); USES (Uses) (gelled electrolyte for photoelectrochem. systems containing) | | | |
| IT | Alcohols, uses RL: TEM (Technical or engineered material use); USES (Uses) (metal salts, gelled electrolyte for photoelectrochem. systems containing) | | | |

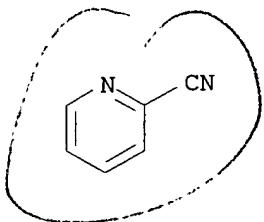
- IT Photoelectric devices, solar
(photoelectrochem., gelled electrolyte for)
- IT 60-29-7, Ether, uses 75-05-8, Acetonitrile, uses 96-49-1, Ethylene carbonate 106-51-4, Quinone, uses 108-32-7, Propylene carbonate 109-99-9, THF, uses 123-31-9, Hydroquinone, uses 1910-42-5, Methyl viologen 7439-93-2D, Lithium, salts 7440-09-7D, Potassium, salts 7440-23-5D, Sodium, salts 7553-56-2, Iodine, uses 7726-95-6, Bromine, uses 14798-03-9D, Ammonium, salts 25322-68-3, PEO 25322-69-4, Polypropylene oxide
RL: TEM (Technical or engineered material use); USES (Uses)
(gelled electrolyte for photoelectrochem. systems containing)
- IT 1910-42-5, Methyl viologen
RL: TEM (Technical or engineered material use); USES (Uses)
(gelled electrolyte for photoelectrochem. systems containing)
- RN 1910-42-5 HCPLUS
- CN 4,4'-Bipyridinium, 1,1'-dimethyl-, dichloride (8CI, 9CI) (CA INDEX NAME)



●2 Cl⁻

- L26 ANSWER 40 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
AN 1994:522336 HCPLUS
DN 121:122336
TI Conductivities of 1:1 salts in 2-cyanopyridine
AU Hefter, G. T.; Salomon, M.
CS Power, Sources Div., U.S. Army EPSD, Fort Monmouth, NJ, 07703-5601, USA
SO Journal of Solution Chemistry (1994), 23(5), 579-93
CODEN: JSLCAG; ISSN: 0095-9782
DT Journal
LA English
CC 76-1 (Electric Phenomena)
Section cross-reference(s): 68
AB Electrolytic conductivities of eight simple 1:1 electrolytes have been measured in dilute solns. of 2-cyanopyridine (2CNP) at 30°. Infinite dilution mobilities and association consts. were calculated using the Fuoss-Hsia equation. With the exception of LiCF₃SO₃, all salts show very little association, consistent with the very high dielec. constant of 2CNP. The weak association which does occur is attributed to weak ion-solvent interactions. No evidence was found for triple ion formation. Conductivities of concentrated solns. of LiAsF₆ in 2CNP increase slowly with concentration reaching a maximum at a concentration of around 0.65 mol-dm⁻³. These conductances are slightly lower than those in propylene carbonate which has a lower dielec. constant and a higher viscosity. Conductivities of concentrated LiAsF₆ solns. in 2CNP mixts. with acetonitrile vary monotonically, consistent with solution viscosities, and show no sign of the maximum commonly observed in mixed organic solvents.

ST electrolytic cond salt cyanopyridine
 IT Electric conductivity and conduction
 (of simple 1:1 salts in 2-cyanopyridine)
 IT 100-70-9, 2-Cyanopyridine
 RL: PRP (Properties)
 (elec. conductivity of simple 1:1 **electrolytes** in)
 IT 311-28-4, Tetrabutylammonium iodide 631-40-3, Tetrapropylammonium iodide
 7601-89-0, Sodium perchlorate 29935-35-1, Lithium
 hexafluoroarsenate 33454-82-9, Lithium
 trifluoromethanesulfonate 41524-04-3, Cesium trifluoromethanesulfonate
 73491-35-7, Rubidium trifluoromethanesulfonate 90076-65-6
 RL: PRP (Properties)
 (electrolytic conductivity of, in 2-cyanopyridine)
 IT 100-70-9, 2-Cyanopyridine
 RL: PRP (Properties)
 (elec. conductivity of simple 1:1 **electrolytes** in)
 RN 100-70-9 HCPLUS
 CN 2-Pyridinecarbonitrile (9CI) (CA INDEX NAME)



L26 ANSWER 41 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN
 AN 1994:249321 HCPLUS
 DN 120:249321
 TI **Nonaqueous** electrolyte batteries with improved solvents
 IN Watanabe, Hiroshi; Yoshimura, Seiji; Takahashi, Masatoshi; Ooshita, Ryuji;
 Suemori, Atsushi; Furukawa, Sanehiro; Nishio, Koji
 PA Sanyo Electric Co, Japan
 SO Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M006-16
 ICS H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | JP 05343076 | A2 | 19931224 | JP 1992-171674 | 19920604 |
| PRAI | JP 1992-171674 | | 19920604 | | |
| AB | Li batteries use electrolyte solvents containing bathophenanthroline and/or 2,2'-dipyridyl. These solvents are resistant to Li ⁺ induced decomposition and render the batteries long cycle life. | | | | |
| ST | bathophenanthroline electrolyte solvent lithium battery; dipyridyl electrolyte solvent lithium battery | | | | |
| IT | Battery electrolytes (lithium salt, solvent mixts. containing bathophenanthroline and/or 2,2'-dipyridyl for) | | | | |
| IT | 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 4437-85-8, 1,2-Butylene carbonate | | | | |
| RL | USES (Uses) (electrolyte solvents containing bathophenanthroline and/or 2,2'-dipyridyl | | | | |

and, for lithium batteries)

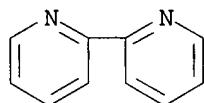
IT 21324-40-3, Lithium hexafluorophosphate 33454-82-9
 RL: USES (Uses)
 (electrolyte solvents containing bathophenanthroline and/or 2,2'-dipyridyl
 for, in lithium batteries)

IT 366-18-7, 2,2'-Dipyridyl 1662-01-7, Bathophenanthroline
 RL: USES (Uses)
 (electrolyte solvents containing, for lithium
 batteries)

IT 366-18-7, 2,2'-Dipyridyl
 RL: USES (Uses)
 (electrolyte solvents containing, for lithium
 batteries)

RN 366-18-7 HCAPLUS

CN 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



L26 ANSWER 42 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1993:216583 HCAPLUS
 DN 118:216583
 TI Nonaqueous-electrolyte lithium batteries
 IN Watanabe, Hiroshi; Yoshimura, Seiji; Takahashi, Masatoshi; Oshita, Ryuji;
 Furukawa, Sanehiro
 PA Sanyo Electric Co., Ltd., Japan
 SO Jpn. Kokai Tokyo Koho, 5 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------------|------|----------|-----------------|----------|
| JP 04337258 | A2 | 19921125 | JP 1991-110421 | 19910515 |
| JP 2999847 | B2 | 20000117 | | |
| PRAI JP 1991-110421 | | 19910515 | | |

AB The electrolytes contain ≥ 1 bipyridine (derivs.). Preferably, the electrolytes contain LiCF₃SO₃; LiPF₆, LiBF₄, LiAsF₆, or LiSbF₆ as solute. The electrolytes are oxidation resistant, and the batteries have good property in storing and charge-discharge cycling.

ST lithium battery electrolyte bipyridine
 IT Battery electrolytes
 (lithium salt, bipyridine derivs. in, for oxidn resistance)
 IT 14283-07-9, Lithium tetrafluoroborate (LiBF₄) 18424-17-4
 21324-40-3, Lithium hexafluorophosphate (LiPF₆) 29935-35-1,
 Lithium hexafluoroarsenate (LiAsF₆) 33454-82-9,
 Trifluoromethanesulfonic acid lithium salt
 RL: USES (Uses)
 (electrolytes containing, bipyridine derivs. in, for secondary
 lithium batteries)

IT 366-18-7, 2,2'-Bipyridine 553-26-4, 4,4'-Bipyridine

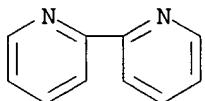
1983-60-4 37275-48-2, Bipyridine
RL: MOA (Modifier or additive use); USES (Uses)
(electrolytes containing, for secondary lithium batteries)

IT 366-18-7, 2,2'-Bipyridine 553-26-4, 4,4'-Bipyridine
1983-60-4

RL: MOA (Modifier or additive use); USES (Uses)
(electrolytes containing, for secondary lithium batteries)

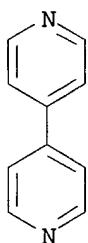
RN 366-18-7 HCPLUS

CN 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



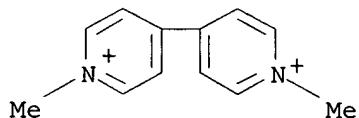
RN 553-26-4 HCPLUS

CN 4,4'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



RN 1983-60-4 HCPLUS

CN 4,4'-Bipyridinium, 1,1'-dimethyl-, diiodide (8CI, 9CI) (CA INDEX NAME)



●2 I-

L26 ANSWER 43 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN

AN 1992:554593 HCPLUS

DN 117:154593

TI Nonaqueous electrolyte secondary lithium batteries

IN Ooshita, Ryuji; Watanabe, Hiroshi; Yoshimura, Seiji; Furukawa, Sanehiro

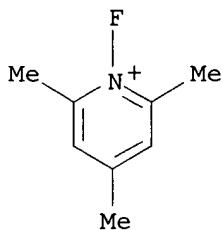
PA Sanyo Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

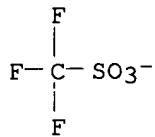
DT Patent
 LA Japanese
 IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|-----------------|----------|
| PI | JP 04160766 | A2 | 19920604 | JP 1990-284631 | 19901022 |
| | JP 2940706 | B2 | 19990825 | | |
| PRAI | JP 1990-284631 | | 19901022 | | |
| AB | The battery electrolytes contain organic solvents , solutes, and triflates having substituents containing conjugated groups. Preferably, the triflates are N-fluoropyridinium triflate (derivs.) and/or benzene triflate (derivs.). Li dendrite generation is prevented in the batteries. | | | | |
| ST | lithium battery electrolyte additive triflate; pyridinium triflate lithium battery electrolyte; benzene triflate lithium battery electrolyte | | | | |
| IT | Battery electrolytes (containing triflate compds., for dendrite growth prevention) | | | | |
| IT | 107263-95-6, N-Fluoropyridinium triflate 107264-00-6, N-Fluoro-2,4,6-trimethylpyridinium triflate 107264-06-2, N-Fluoro-3,5-dichloropyridinium triflate | | | | |
| | RL: USES (Uses) (battery electrolytes containing, lithium secondary, for dendrite growth prevention) | | | | |
| IT | 17763-67-6 29935-35-1, Lithium hexafluoroarsenate (LiAsF ₆) RL: USES (Uses) (battery electrolytes containing, lithium secondary, with dendrite prevention) | | | | |
| IT | 107264-00-6, N-Fluoro-2,4,6-trimethylpyridinium triflate 107264-06-2, N-Fluoro-3,5-dichloropyridinium triflate RL: USES (Uses) (battery electrolytes containing, lithium secondary, for dendrite growth prevention) | | | | |
| RN | 107264-00-6 HCAPLUS | | | | |
| CN | Pyridinium, 1-fluoro-2,4,6-trimethyl-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME) | | | | |
| CM | 1 | | | | |
| CRN | 107263-99-0 | | | | |
| CMF | C8 H11 F N | | | | |



CM 2

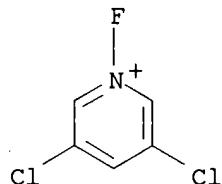
CRN 37181-39-8
 CMF C F3 O3 S



RN 107264-06-2 HCPLUS
 CN Pyridinium, 3,5-dichloro-1-fluoro-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

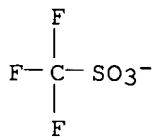
CM 1

CRN 107264-05-1
 CMF C5 H3 Cl2 F N



CM 2

CRN 37181-39-8
 CMF C F3 O3 S



L26 ANSWER 44 OF 45 HCPLUS COPYRIGHT 2003 ACS on STN

AN 1985:512237 HCPLUS

DN 103:112237

TI Sheetlike battery

PA Seiko Instruments and Electronics, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M006-12

CC 72-3 (Electrochemistry)

FAN.CNT 1

| | | | | |
|------------|------|------|-----------------|------|
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|------|-----------------|------|

| PI | JP 60032252 | A2 | 19850219 | JP 1983-141582 | 19830802 |
|------|--|------------|-----------------------------------|----------------|----------|
| PRAI | JP 1983-141582 | | 19830802 | | |
| AB | A sheetlike battery is described, which consists of thin-layer or sheetlike cathode and anode active materials (e.g., Zn and MnO ₂) and sheetlike cathode and anode collectors. The battery is provided with ≥1 portions spot adhered in the thickness direction at the central region of the battery to decrease the internal resistance and improve the storage property. Optionally, the spot-adhered portions may be prepared by heat sealing. | | | | |
| ST | zinc manganese oxide battery; sheet like battery | | | | |
| IT | Batteries, primary (sheet-like) | | | | |
| IT | 7440-43-9, uses and miscellaneous | | 7440-66-6, uses and miscellaneous | | |
| | RL: USES (Uses) | | | | |
| | (anode, in sheet-like battery) | | | | |
| IT | 7429-90-5, uses and miscellaneous | | 7440-23-5, uses and miscellaneous | | |
| | RL: USES (Uses) | | | | |
| | (anode, in sheet-like battery with organic electrolyte) | | | | |
| IT | 7439-93-2, uses and miscellaneous | | | | |
| | RL: USES (Uses) | | | | |
| | (anode, in sheet-like organic electrolyte or solid electrolyte battery) | | | | |
| IT | 7440-22-4, uses and miscellaneous | | | | |
| | RL: USES (Uses) | | | | |
| | (anode, in sheet-like solid electrolyte battery) | | | | |
| IT | 1313-13-9, uses and miscellaneous | | 7782-44-7, uses and miscellaneous | | |
| | RL: USES (Uses) | | | | |
| | (cathode, in sheet-like battery with cadmium or zinc) | | | | |
| IT | 1301-96-8 12026-04-9 | 20667-12-3 | | | |
| | RL: PRP (Properties) | | | | |
| | (cathode, in sheet-like battery with cadmium or zinc) | | | | |
| IT | 1314-62-1, uses and miscellaneous | | 1317-38-0, uses and miscellaneous | | |
| | 1317-40-4 | | | | |
| | RL: USES (Uses) | | | | |
| | (cathode, in sheet-like organic electrolyte battery) | | | | |
| IT | 7784-01-2 11113-63-6 | 11126-12-8 | 12356-42-2 | | |
| | RL: PRP (Properties) | | | | |
| | (cathode, in sheet-like organic electrolyte battery) | | | | |
| IT | 7704-34-9, uses and miscellaneous | | | | |
| | RL: USES (Uses) | | | | |
| | (cathode, in sheet-like solid electrolyte battery with silver or lithium) | | | | |
| IT | 874-81-7 12039-13-3 | 12298-69-0 | 34503-47-4 | | |
| | RL: PRP (Properties) | | | | |
| | (cathode, in sheet-like solid electrolyte battery with silver or lithium) | | | | |
| IT | 7790-29-6 | | | | |
| | RL: PRP (Properties) | | | | |
| | (cathode, with lead sulfide in sheet-like solid electrolyte battery with silver or lithium) | | | | |
| IT | 1314-87-0 | | | | |
| | RL: PRP (Properties) | | | | |
| | (cathode, with rubidium iodide in sheet-like solid electrolyte battery with lithium or silver) | | | | |
| IT | 1310-58-3, uses and miscellaneous | | 1310-73-2, uses and miscellaneous | | |
| | 7646-85-7, uses and miscellaneous | | | | |
| | RL: USES (Uses) | | | | |
| | (electrolyte containing, for zinc or cadmium sheet-like battery) | | | | |

IT 7791-03-9 14283-07-9 29935-35-1
RL: PRP (Properties)
(electrolyte, in **organic solvent** for sheet-like
battery)

IT 26134-62-3
RL: PRP (Properties)
(electrolyte, with and without **lithium** iodide and
lithium hydroxide, for sheet-like battery with **lithium**
or silver)

IT 10377-51-2
RL: PRP (Properties)
(solid electrolyte containing, for sheet-like battery with silver or
lithium)

IT 1310-65-2
RL: PRP (Properties)
(solid electrolyte from **lithium** iodide and **lithium**
nitrate and, for sheet-like **lithium** or silver battery)

IT 1344-28-1, uses and miscellaneous
RL: USES (Uses)
(solid electrolyte from **lithium** iodide containing, for sheet-like
battery with silver or **lithium**)

IT 7550-35-8 10377-51-2 12267-44-6 37220-89-6
RL: PRP (Properties)
(solid electrolyte, in sheet-like battery with silver or
lithium)

IT 34503-47-4
RL: PRP (Properties)
(cathode, in sheet-like solid **electrolyte** battery with silver
or **lithium**)

RN 34503-47-4 HCPLUS

CN Pyridine, 2-ethenyl-, homopolymer, compd. with iodine (9CI) (CA INDEX
NAME)

CM 1

CRN 7553-56-2
CMF I2

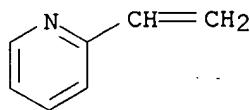
I-I

CM 2

CRN 25014-15-7
CMF (C7 H7 N)x
CCI PMS

CM 3

CRN 100-69-6
CMF C7 H7 N



L26 ANSWER 45 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1985:425001 HCAPLUS
 DN 103:25001
 TI Organic-electrolyte battery
 PA Matsushita Electric Industrial Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M006-16
 ICS H01M004-36
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------------|------|----------|-----------------|----------|
| JP 60035461 | A2 | 19850223 | JP 1983-143036 | 19830803 |
| PRAI JP 1983-143036 | | 19830803 | | |

AB A **nonaq.** battery has a metal oxide or sulfide cathode, a light-metal anode, and an organic electrolyte; a chelating agent that chelates with the metal in the cathode is contained in or mixed with the electrolyte or the cathode. This prevents deposition of metals on anode, and thus increases the storage life of the battery. Thus, the cathode was prepared by press forming a mixture containing purified natural FeS₂ (95% purity)

100, acetylene black 5, and PTFE 5 parts on Ni mesh. Anode was press formed **Li** on Ni mesh. The electrolyte was M LiClO₄ in 1:1 propylene carbonate-MeOCH₂CH₂OMe and contained 0.2% phenanthroline [66-71-7]. After storage at 60° for 6 mo, the battery showed only minimal drop of initial voltage. Mixing 2% phenanthroline with cathode material had similar effect.

ST battery **nonaq** electrolyte chelating agent; cathode **nonaq** battery chelating agent; phenanthroline **nonaq** battery electrolyte; **lithium** iron sulfide phenanthroline battery

IT Batteries, primary
 (lithium-iron sulfide, with electrolyte containing chelating agent)

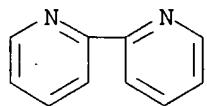
IT Cathodes
 (battery, iron sulfide, containing chelating agent)

IT 66-71-7 366-18-7
 RL: USES (Uses)
 (cathodes or **electrolyte** containing, iron sulfide, battery)

IT 1317-40-4 12068-85-8
 RL: USES (Uses)
 (cathodes, containing chelating agent, battery)

IT 366-18-7
 RL: USES (Uses)
 (cathodes or **electrolyte** containing, iron sulfide, battery)

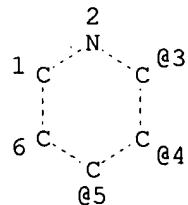
RN 366-18-7 HCAPLUS
 CN 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



=> => D QUE

L3

STR



A @7

VPA 7-3/4/5 U

NODE ATTRIBUTES:

NSPEC IS RC AT 7
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC I
NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE

L14 36196 SEA FILE=HCAPLUS ABB=ON BATTER?(L) ELECTROLYT?
L15 SEL L14 1- RN : 36335 TERMS
L16 36311 SEA FILE=REGISTRY ABB=ON L15
L18 379 SEA FILE=REGISTRY SUB=L16 SSS FUL L3
L19 79379 SEA FILE=HCAPLUS ABB=ON L18
L20 79379 SEA FILE=HCAPLUS ABB=ON L19 AND L16
L21 407 SEA FILE=HCAPLUS ABB=ON L19(L) ELECTROLYT?
L22 407 SEA FILE=HCAPLUS ABB=ON L20 AND L21
L23 131 SEA FILE=HCAPLUS ABB=ON L21 AND (LI OR LITHIUM)
L24 38 SEA FILE=HCAPLUS ABB=ON L23 AND (NON(W)AQUEOUS OR NONAQUEOUS)

L25 9 SEA FILE=HCAPLUS ABB=ON L23 AND ORG?(2A) SOLVENT#
L26 45 SEA FILE=HCAPLUS ABB=ON L24 OR L25
L28 21390 SEA FILE=REGISTRY ABB=ON LITHIUM AND SALT
L29 67527 SEA FILE=HCAPLUS ABB=ON L28
L30 56 SEA FILE=HCAPLUS ABB=ON L22 AND L29
L31 22 SEA FILE=HCAPLUS ABB=ON L30 AND (NONAQ? OR NON(W)AQUEOUS OR
ORG?(2A) SOLVENT#)
L32 1 SEA FILE=HCAPLUS ABB=ON (L26 OR L31) NOT L26

=> D ALL L32 HITSTR

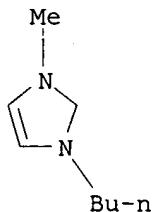
L32 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 2002:773877 HCAPLUS
 DN 137:313487
 TI Polysiloxane salt, electrolyte composition, battery, secondary
 nonaqueous battery, and photoelectrochemical cell
 IN Ono, Michio; Sen, Masakazu
 PA Fuji Photo Film Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 34 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-40
 ICS H01M010-40; C08G077-392; H01B001-06; H01M014-00
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| JP 2002298913 | A2 | 20021011 | JP 2001-97652 | 20010329 |

PRAI JP 2001-97652 20010329
 OS MARPAT 137:313487
 AB The electrolyte contains a polysiloxane salt, having a Group I or Group II metal cation or an organic cation and an anion containing a -(SiR₁R₂O)_n- (R₁ and R₂ = alkyl, aryl, and alkoxy groups, n = integer ≥3) group and a H⁺ dissociating sulfonamide, sulfonimide, N-acylsulfonamide, alc., phenol, or sulfonic acid. The salt is R₃(SiR₁R₂O)_nSiR₁R₂L₁Y₁.X₁ or X₂.Y₂L₂(SiR₁R₂O)_nSiR₁R₂L₁.X₁, where R₃ = (substituted) alkyl group, X₁ and X₂ = cations, L₁ and L₂ = bivalent connection groups including alkylene groups, Y₁ and Y₂ = anion group containing substituents. Secondary nonaq. batteries and photoelectrochem. cells use the electrolyte.
 ST secondary battery nonaq polysiloxane electrolyte compn;
 photoelectrochem cell nonaq polysiloxane electrolyte compn
 IT Battery electrolytes
 Photoelectrochemical cells
 (compns. of polysiloxane salt electrolytes for secondary nonaq
 . batteries and photoelectrochem. cells)
 IT 7553-56-2, Iodine, uses 65039-05-6 470709-30-9
 470709-33-2 470709-35-4 470709-38-7
 470709-40-1 470709-42-3 470709-44-5
 470709-46-7
 RL: DEV (Device component use); USES (Uses)
 (compns. of polysiloxane salt electrolytes for secondary
 nonaq. batteries and photoelectrochem. cells)
 IT 7553-56-2, Iodine, uses 65039-05-6 470709-30-9
 470709-33-2 470709-35-4 470709-38-7
 470709-40-1 470709-42-3 470709-44-5
 470709-46-7
 RL: DEV (Device component use); USES (Uses)
 (compns. of polysiloxane salt electrolytes for secondary
 nonaq. batteries and photoelectrochem. cells)
 RN 7553-56-2 HCAPLUS
 CN Iodine (8CI, 9CI) (CA INDEX NAME)

I-I

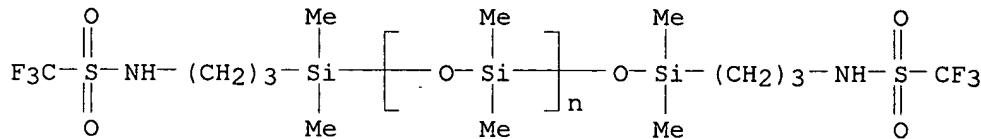
RN 65039-05-6 HCPLUS
 CN 1H-Imidazolium, 1-butyl-3-methyl-, iodide (9CI) (CA INDEX NAME)



● I⁻

*** FRAGMENT DIAGRAM IS INCOMPLETE ***

RN 470709-30-9 HCPLUS
 CN Poly[oxy(dimethylsilylene)], α -[dimethyl[3-[(trifluoromethyl)sulfonyl]amino]propyl]silyl]- ω -[[dimethyl[3-[(trifluoromethyl)sulfonyl]amino]propyl]silyl]oxy-, dilithium salt (9CI) (CA INDEX NAME)

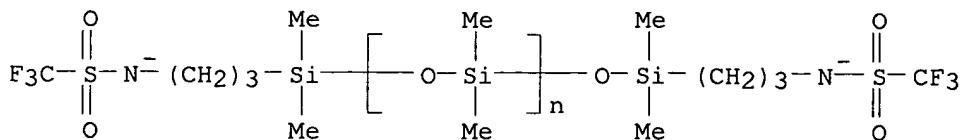


●2 Li

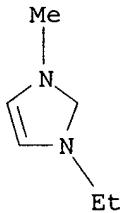
RN 470709-33-2 HCPLUS
 CN 1H-Imidazolium, 1-ethyl-3-methyl-, salt with α -[dimethyl[3-[(trifluoromethyl)sulfonyl]amino]propyl]silyl]- ω -[[dimethyl[3-[(trifluoromethyl)sulfonyl]amino]propyl]silyl]oxy]poly[oxy(dimethylsilylene)] (2:1) (9CI) (CA INDEX NAME)

CM 1

CRN 470709-32-1
 CMF (C2 H6 O Si)n C12 H24 F6 N2 O5 S2 Si2
 CCI PMS



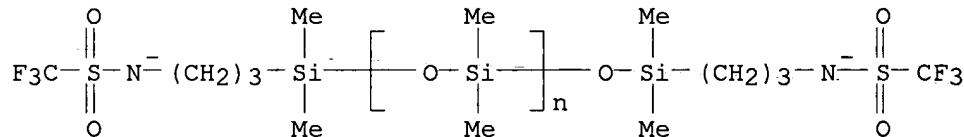
CM 2

CRN 65039-03-4
CMF C6 H11 N2

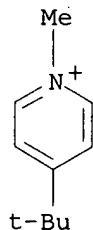
*** FRAGMENT DIAGRAM IS INCOMPLETE ***

RN 470709-35-4 HCPLUS
CN Pyridinium, 4-(1,1-dimethylethyl)-1-methyl-, salt with
α-[dimethyl[3-[(trifluoromethyl)sulfonyl]amino]propyl]silyl]-
ω-[[dimethyl[3-[(trifluoromethyl)sulfonyl]amino]propyl]silyl]oxy]Po-
ly[oxy(dimethylsilylene)] (2:1) (9CI) (CA INDEX NAME)

CM 1

CRN 470709-32-1
CMF (C2 H6 O Si)n C12 H24 F6 N2 O5 S2 Si2
CCI PMS

CM 2

CRN 33255-76-4
CMF C10 H16 NRN 470709-38-7 HCPLUS
CN Ethanaminium, N,N,N-triethyl-2-methoxy-, salt with α-[dimethyl[3-[(trifluoromethyl)sulfonyl]amino]ethoxy]propyl]silyl]-ω-

[{dimethyl[3-[2-[[trifluoromethyl]sulfonyl]amino]ethoxy]propyl}silyloxy]
poly[oxy(dimethylsilylene)] (2:1) (9CI) (CA INDEX NAME)

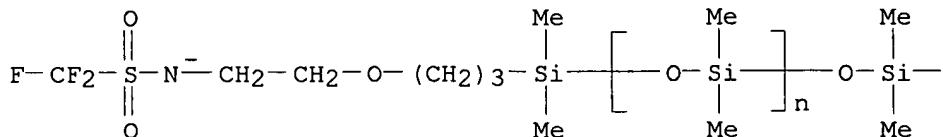
CM 1

CRN 470709-37-6

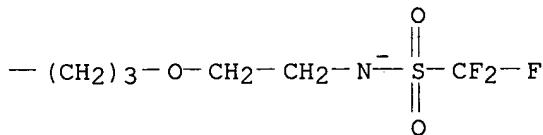
CMF (C₂ H₆ O Si)_n C₁₆ H₃₂ F₆ N₂ O₇ S₂ Si₂

CCI PMS

PAGE 1-A



PAGE 1-B



CM 2

CRN 464927-73-9

CMF C₉ H₂₂ N OEt₃⁺N-CH₂-CH₂-OMe

RN 470709-40-1 HCPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, salt with α -(8,8,8-trifluoro-1,1-dimethyl-5,5,7,7-tetraoxido-5,7-dithia-6-aza-1-silaoct-1-yl)- ω -(8,8,8-trifluoro-1,1-dimethyl-5,5,7,7-tetraoxido-5,7-dithia-6-aza-1-silaoct-1-yl)oxy]poly[oxy(dimethylsilylene)] (2:1) (9CI) (CA INDEX NAME)

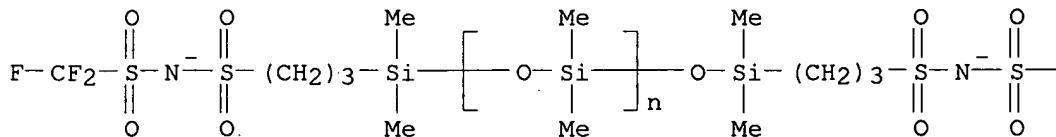
CM 1

CRN 470709-39-8

CMF (C₂ H₆ O Si)_n C₁₂ H₂₄ F₆ N₂ O₉ S₄ Si₂

CCI PMS

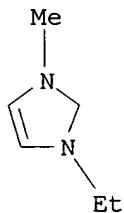
PAGE 1-A



PAGE 1-B

— CF₂ — F

CM 2

CRN 65039-03-4
CMF C6 H11 N2

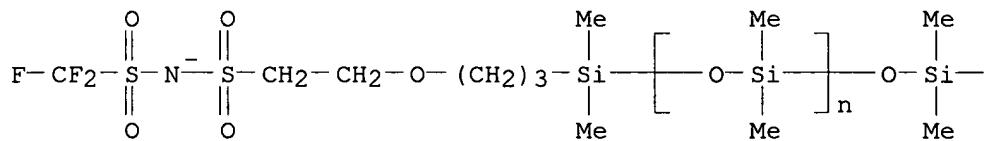
*** FRAGMENT DIAGRAM IS INCOMPLETE ***

RN 470709-42-3 HCAPLUS
 CN 1H-Imidazolium, 1,3-dimethyl-, salt with α -(11,11,11-trifluoro-1,1-dimethyl-3,3,10,10-tetraoxido-5-oxa-8,10-dithia-9-aza-1-silaundec-1-yl)- ω -[(11,11,11-trifluoro-1,1-dimethyl-3,3,10,10-tetraoxido-5-oxa-8,10-dithia-9-aza-1-silaundec-1-yl)oxy]poly[oxy(dimethylsilylene)] (2:1) (9CI)
 (CA INDEX NAME)

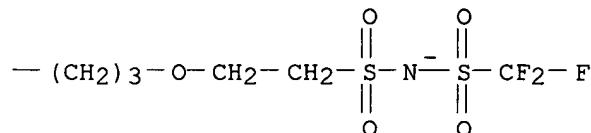
CM 1

CRN 470709-41-2
CMF (C₂ H₆ O Si)_n C₁₆ H₃₂ F₆ N₂ O₁₁ S₄ Si₂
CCI PMS

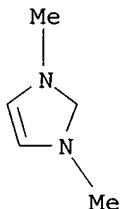
PAGE 1-A



PAGE 1-B



CM 2

CRN 45470-32-4
CMF C5 H9 N2

*** FRAGMENT DIAGRAM IS INCOMPLETE ***

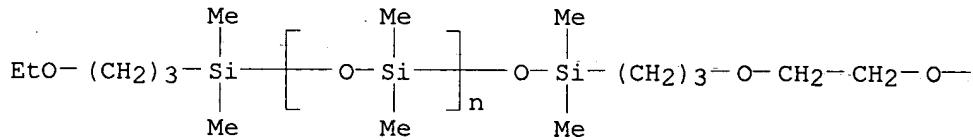
RN 470709-44-5 HCPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, salt with α -[(3-ethoxypropyl)dimethylsilyl]- ω -[(15,15,15-trifluoro-1,1-dimethyl-14,14-dioxido-12-oxo-5,8-dioxa-14-thia-13-aza-1-silapentadec-1-yl)oxy]poly[oxy(dimethylsilylene)] (1:1) (9CI) (CA INDEX NAME)

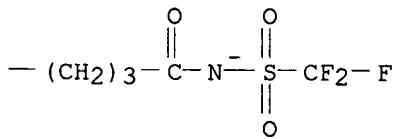
CM 1

CRN 470709-43-4
CMF (C2 H6 O Si)n C19 H39 F3 N O7 S Si2
CCI PMS

PAGE 1-A

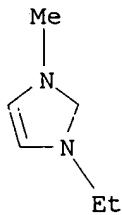


PAGE 1-B



CM 2

CRN 65039-03-4
CMF C6 H11 N2



*** FRAGMENT DIAGRAM IS INCOMPLETE ***

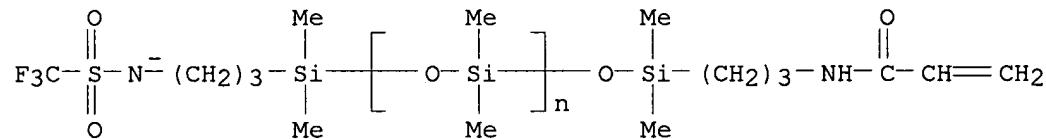
RN 470709-46-7 HCPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, salt with α -[dimethyl[3-[(trifluoromethyl)sulfonyl]amino]propyl]silyl]- ω -[[dimethyl[3-[(1-oxo-2-propenyl)amino]propyl]silyl]oxy]poly[oxy(dimethylsilylene)] (1:1) (9CI) (CA INDEX NAME)

CM 1

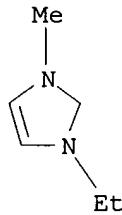
CRN 470709-45-6

CMF (C₂ H₆ O Si)_n C₁₄ H₂₈ F₃ N₂ O₄ S Si₂
CCI PMS



CM 2

CRN 65039-03-4
CMF C₆ H₁₁ N₂



*** FRAGMENT DIAGRAM IS INCOMPLETE ***

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